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ABSTRACT

The purpose of this symposium on research in distance education was to continue the process of building the network of scholars and climate of cooperation and communication necessary for further development of distance education and to provide an opportunity for discussion. Four main areas of focus for the symposium were learning and characteristics of learners; course design and communication; instruction and learner support; and theory, policy, and management. There are eight papers in this collection: "Conative Capacity and Attention Control Implications for Distance Education" (Kathryn S. Atman); "Boundary Articulation, Domain Determination, and Organizational Learning in Distance Education: Practice Opportunities and Research Needs" (Joe F. Donaldson); "Collaborative Learning and Group Dynamics in Computer-Mediated Communication Networks" (Charlotte N. Gunawardena); "Identifying Performance Improvement Prescriptions for Distance Learning and Teaching: Quantitative and Qualitative Approaches" (M. Winston Egan, Joan Sebastian, Marshall Welch, and Brent Page); "Designing Policy Tools for the Third Generation of Distance Education" (Gary E. Miller); "Research-Based Approaches to Dealing with Student Attrition: Experiences at the American College" (John W. Bajtelsmit); "Synergistic Model for Statewide Telecommunications Success" (Robert B. Leiter); and "Theory of Distance Education" (Michael G. Moore). Most of the papers contain references. (JLB)

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DISTANCE EDUCATION SYMPOSIUM: SELECTED PAPERS

PART 3

Papers Presented at
The Second American Symposium
on Research in Distance Education

The Pennsylvania State University
May, 1991

Kathryn S. Atman
Joe F. Donaldson
Charlotte N. Gunawardena
M. Winston Egan, J. Sebastian, M. Welch, and B. Page
Gary E. Miller
John W. Bajtelsmit
Robert B. Leiter
Michael G. Moore

Number 9 in the series Research Monographs

American Center for the
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College of Education
The Pennsylvania State University

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Preface

In Spring 1991, The American Center for the Study of Distance Education, a graduate teaching and research group at Penn State University with a network of associates around the country, extended invitations to approximately fifty researchers and scholars in distance education to participate in The Second American Symposium on Research in Distance Education. Hosted by Dr. Michael Moore, Director of The Center, and funded by the Annenberg/CPB Project, the Symposium brought together a select group of educational researchers to share their knowledge of the present and projected condition of the distance education field, with particular reference to developments since the First Symposium of July 1988.

The purpose of the Second Symposium was to continue the process of building the network of scholars and the climate of cooperation and communication necessary for the further development of distance education by providing an opportunity for discussion among some of those who had been present in 1988, augmented by an equal number of persons who had identified an interest in distance education research since then. Because the First Symposium had resulted in an important set of papers subsequently published in the Pergamon book *Contemporary Issues in American Distance Education*, each person invited to the Second Symposium was asked to prepare a paper, the hope being that these papers would form a series of publications as well as provide a vital resource for discussion in the Symposium.

The authors were asked to "review recent developments in research and study of distance education, to conduct further analysis of research needs, and to plan future research and scholarly work." In order to refine and carry out this broad agenda, four areas of focus were identified: 1) Learning and Characteristics of Learners; 2) Course Design and Communication; 3) Instruction and Learner Support; and 4) Theory, Policy, and Management. The following papers comprise the third in a series of monographs devoted to the research issues considered at the Second Symposium.

Michael G. Moore

Conative Capacity and Attention Control Implications for Distance Education

Kathryn S. Atman

> Control of the mind as a working machine, the adaptation in it of habit, so that its action becomes almost as automatic as walking, is the end of education and yet how rarely reached.

These words, delivered in 1913 by Sir William Osler to Yale students in an address titled, "A Way of Life," provide both a commentary on and a challenge to distance educators. For an individual to take control of the mind as a "working machine," he or she must manifest behaviors that are determined, persistent, and resolute—personal qualities that, according to Assagioli (1973), are outstanding characteristics of individuals who have a strong will. These qualities are characteristic of a successful distance education student. This type of individual possesses a capacity for self-motivation and the skills of self-regulation and attention control. In short, he or she is a successful striver.

Promoting successful striving among distance education students is an issue of vital concern for distance educators. Without sufficient intrinsic motivation, manifested as successful striving, students may register for distance education courses but not complete them. From this observation follows the premise of this paper: Students who are successful in distance education programs manifest 1) *conation,* or conative capacity, a condition of vectored personal energy wherein the energy of an individual is characterized by both direction and magnitude, i.e, the energy is goal directed (Atman 1987); and 2) *attention control,* the ability of the individual to handle what is going on in his or her external and/or internal environments without becoming overloaded (Nideffer 1979).

What is conation? McDougall (1932) provides this definition:

> Although our modes of striving are so various, ranging from intense bodily activity to intellectual activity that involves a minimum of bodily expression, we find the same words suitable for describing this striving aspect common to all such activities. We say we are trying, striving, endeavoring, paying keen attention, making an effort, working hard, doing our utmost, exerting ourselves, concentrating all our energies; in technical terms, we are manifesting conation. (p. 117)

Another definition, found in *Good's Dictionary of Education* (1973), distinguishes the conative domain from the well-known cognitive and affective domains: conation is "[t]hat aspect of man's psychic life having to do with striving and will, traditionally distinguished from cognition and affection."

The conative domain should be a particularly compelling concern of distance educators. Without students who have the capacity to persevere in their striving toward academic goals, there would be no market for distance education courses.

However, conation is a term that may not be familiar to distance educators. The term was first used by German and Scottish psychologists in the late 1700s in describing the tripartite faculties of the mind: cognition (knowing); affection (valuing); and conation (striving). However, the term "conation" fell into disuse in the twentieth century (Hilgard 1980).

With growing interest in cognitive psychology, however, questions have been raised concerning the nature of mental functioning. Snow (1980) speculated about the limitations of information-processing research and identified the problem of conation as an area where study and investigation might be warranted.

Implications of the conative domain for distance education have been discussed (Atman 1987, 1988, 1990). However, the specific link between conative capacity and attention control, alluded to in the taxonomy of the conative domain (Atman 1987), has not been explored in depth within the distance education context. In the following sections of this paper, data linking the two elements are presented and implications for distance education are discussed.

Conation and Attention Control Conation

Individuals seldom strive in a vacuum; rather, they strive toward goals. Thus, by examining a systematic goal-setting process, one is able to consider both the specific actions that lead from goal setting to goal accomplishment, and the manner in which their attention control skills influence the striving process itself. The goal-setting process to be considered in this paper is the Conation Cycle, a twelve-step problem-solving/decision-making model (Atman 1982). The Conation Cycle, as a theoretical model of goal accomplishment, contains twelve steps drawn from achievement motivation literature and an entrepreneurial case study. Steps in the Cycle are described as concrete behaviors and are measured by the Goal Orientation Index (GOI) (Atman 1986). The Cycle comprises these steps:

1. Recognize a need, problem, challenge, or opportunity.
2. Set a goal.

3. Brainstorm alternatives.
4. Assess risk.
5. Select a strategy (be decisive).
6. Get your act in gear (visualize).
7. Organize.
8. Make it happen.
9. Push on (don't procrastinate).
10. Wrap it up.
11. Ooo & Ah! (evaluate and give yourself a reward).
12. Establish purpose and long-range direction.

To understand the complexity of the goal accomplishment process, one must take into account an additional factor: level of attention. An individual may strive, for example, in a minimal, cursory, perfunctory, thorough, or absorbed manner (Atman 1987). The result of a varying "level of attention" can be observed in variations in the quality of the performance or product and is the consequence of attention control.

Attention Control

To examine attention control and its link to the process of conation, we will consider a model of attention behaviors developed by Nideffer (1979). The model addresses four types of attention behavior.

- **Broad External:** "Street Sense." Awareness of environment needed in order to read and react to changing situations.
- **Broad Internal:** "Analysis." Used for long-range planning and integration. Anticipation of consequences, development of complex-flexible programs.
- **Narrow External:** "External Action." Focused nondistractable attention, necessary for being able to perform a specific task.
- **Narrow Internal:** "Internal Action." Necessary for intellectual tasks demanding focused concentration. (Nideffer 1979, 16)

The model depicts two "environments": external and internal. Each environment has a broad and a narrow dimension. Strong attention control capacity is found in a person who can 1) respond appropriately to the demands of a given environment and 2) shift from one environment to another as needed. The instrument used to assess an individual's attention control capacity is Nideffer's

Test of Attentional and Interpersonal Style (TAIS) (Nideffer 1973). Six subscales are reported in this study:

1. Broad external attentional focus (BET): An individual can effectively integrate many external stimuli at one time.

2. Overloaded by external stimuli (OET): An individual may become confused and overloaded with external stimuli.

3. Broad internal attentional focus (BIT): An individual is able to effectively integrate ideas and information from several different areas. He/she sees self as analytical and philosophical.

4. Overloaded by internal stimuli (OIT): An individual may become confused by thinking of too many things at once.

5. Narrow attentional focus (NAR): An individual is able to narrow his/her attention when needed (e.g., to study or to read a book).

6. Reduced attentional focus (RED): An individual may make mistakes because he/she narrows attention too much. (Nideffer 1979, 34).

Correlations Between Conative Capacity and Attention Control Capability

In 1988, a study was undertaken to determine possible correlations between the twelve steps in the Conation Cycle and the six dimensions of attention control identified by Nideffer (Atman 1988). Eighty-eight undergraduate students took both the *GOI* and the *TAIS*. Results are reported in Table 1.

Distance educators anticipate that students who enroll in their courses will have the staying power to finish their work. Many students meet time deadlines successfully in distance education courses. Some students, however, may not be able to handle the many course/program requirements that depend on goal-oriented, self-management capabilities and may become overloaded by too much activity in their external and/or their internal environments.

Data from this study indicate strong correlations ($p = < .001$) between the attention control elements of broad external (BET), overload external (OET), broad internal (BIT), overload internal (OIT), and selected categories of the Conation Cycle. These correlations are found in Table 2. Interpretation of the data yields the following findings:

1. Individuals who can handle many things going on in the environment around them are able to 1) recognize needs, problems, challenges and opportunities; 2) set a goal; and 3) make it happen.

2. Individuals who do not become overloaded by what is going on around them are 1) decisive; 2) well organized; and 3) do not procrastinate.

Table 1. Correlations Between Conation Cycle Categories and Attention Control Elements (N=88)

Conation Cycle Categories	Attention Control Elements					
	BET	OET	BIT	OIT	NAR	RED
1. Recognize needs, etc.	.41***		.31**			
2. Set goal	.41***		.29**	-.20*	.25**	
3. Brainstorm alternatives	.25**		.49***		.21*	
4. Assess risks	.20*		.21*		.20*	
5. Select strategy (be decisive)	.21*	-.39***		-.45***		.30**
6. Get your act in gear (visualize)	.19*		.31**		.19*	
7. Organize	.24*	-.40***	.23*	-.46***	.37***	-.18*
8. Make it happen	.47***		.38***		.30**	
9. Push on (don't procrastinate)	.28**	-.46***		-.43***	.28**	-.22*
10. Wrap it up	.27**			-.18*	.30**	
11. Ooo & Ah! (evaluate)	.20*		.38***			
12. Establish purpose, long-range direction			-.21*	.22*		

* p = < .05; ** p = < .01; *** p = < .001

Table 2. Strong Correlations Between Attention Control Elements and Conation Cycle Categories

Attention Control Elements	Conation Cycle Categories
1. Broad External (BET)	1. Recognize needs, problems, challenges, opportunities 2. Set goal 8. Make it happen
2. Overload External (OET)	5. Select strategy (be decisive) 7. Organize 9. Push on (don't procrastinate)
3. Broad Internal (BIT)	3. Brainstorm alternatives 8. Make it happen 11. Ooo & Ah! (evaluate)
4. Overload Internal (OIT)	5. Select strategy (be decisive) 7. Organize 9. Push on
5. Narrow (NAR)	7. Organize

3. Individuals who can handle many things going on in their heads at once are able to 1) brainstorm alternatives; 2) make it happen; and 3) evaluate their own performance.

4. Individuals who do not become overloaded by what is going on in their own heads are able to be 1) decisive; 2) well organized; and 3) do not procrastinate.

5. Individuals who can focus their attention narrowly (as when concentrating on a computer program) are well organized.

The data reported here suggest that distance educators might profitably examine the potential link between attrition and student attention. For example, the goal-oriented skill "ability to organize" is related to the individual's ability to 1) focus attention on a task and 2) resist being overloaded by elements in either the internal or external environment. Would early instruction in time management better contribute to the development in students of the self-managed learning skills needed to ensure course completion? Academic counseling programs, tailored to meet the distance education-related needs of students, could be an important factor in enabling all distance education students to become successful academic achievers.

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Boundary Articulation, Domain Determination, and Organizational Learning in Distance Education: Practice Opportunities and Research Needs

Joe F. Donaldson

Introduction

This paper is based on two premises. The first is that the field of distance education has, to date, been more concerned with how it does its work than with what work is to be done. This particular focus is evident in the field's concern with the details of distance education delivery and of student support, in research which concentrates more upon program design and administration than upon broader issues of organization, and in the emphasis placed on internal realities and organization at the expense of a focus on external realities and relations with distance education's external environments and stakeholders. The second premise is that there is need for still greater concentration and effort in the use of organization theory to inform and to provide a conceptual basis for research on the management and administration of distance education, especially for those higher education organizational units that have major responsibility for distance education within their institutions. Although progress has been made in the use of theories of organization (cf. Moore et al. 1990), much can still be accomplished through greater application of organization theory to the broader organizational issues of the field.

The changing nature of higher education and the uncertainty, heterogeneity, and turbulence that increasingly characterize higher education's environment raise questions about what distance education's work should be, with respect both to higher education and to the external constituencies distance education units and their institutions serve. These changes offer important administrative and organizational opportunities for distance education units to contribute to the further development of higher education within North America. However, these opportunities can be met only if distance education, drawing from organization theory, begins and continues to act in the interrelated areas of boundary articulation, domain determination, and organizational learning.

Boundary Articulation

Organizational boundaries are artificial limits contrived by human beings. There are legal boundaries, as well as those created by custom and practice (Katz and Kahn 1978). Organizational boundaries have two major characteristics: permeability and containment. Permeability includes

consideration of the extent of boundary openness: what can move in and out of the organization and how? Containment, on the other hand, focuses on what is inside the organization and what stays there. Permeability is based on extensiveness of contact with people outside the organization and susceptibility to outside influence; in contrast, containment is based on internal cohesiveness and control (Knox 1982).

As a result of shifting demographics, the boundaries of institutions of higher education have become more permeable to adult learners. Additionally, higher education's infatuation with the new telecommunications technologies has led to their increased use, another sign of increased boundary permeability in the area of distance education. Yet, certain groups of Americans—ethnic minorities and rural adults, for example—still do not have equitable levels of access to higher education, and the use of distance education technologies by higher education is frequently driven more by glamour and myth than by understanding and empirical evidence. Therefore, helping institutions of higher education define the quality and the quantity of boundary permeability remains an issue for the field of distance education.

Although higher education's boundaries may have become more permeable, levels of containment, especially of traditional educational policies and practices, remains high. Few distance education units have full control of their destinies, what learners they serve, and how these learners are provided education. Few institutions have sincerely endorsed the major changes required to reconfigure education within the context of a distance education model. One administrative function related to distance education's need to focus on what work should be done is, therefore, in the area of boundary articulation. The permeability and containment characteristics of higher education's boundaries must be explored, addressed, and changed so that the distance education unit and its institution can deal more effectively with the rapidly changing environment.

Domain Determination

Related to the concept of boundary articulation is domain determination. Organizational domain is defined as the legitimized authority for doing certain work (Benson 1975). As such, the concept of domain draws our attention to the question, "What work should be done?" To the extent that distance education's work includes offering programs of a certain kind and the means with which those programs are provided to learners, domain also includes a focus on legitimacy of programs and delivery methods. Examining the concept of domain raises two issues: "How can distance education obtain legitimacy within higher education for its programs, for the learners it serves, and for the methods it employs?" and "What must be done for higher education to accept as part of its

domain distance education and the reconfiguration of education that will accompany distance education's fuller legitimacy?"

These questions can be addressed in several ways. For example, Votruba (1987) recommends the building of internal support, and Duning (1990) draws our attention to the importance of leadership in dealing with these issues. Another approach, however, focuses on the concept and processes of organizational learning as a means of building internal support and developing the leadership capacities of both distance education administrators and organizational units.

Organizational Learning

Distance education units have the potential for being boundary spanning units of their parent organizations. As boundary spanners, both the unit and its personnel play a critical role in anticipating and dealing with environmental change as it affects the university (Pedersen and Fleming 1981; Knox 1982).

This boundary spanning function becomes even more critical as environmental uncertainty, turbulence, and heterogeneity increase (Aldrich 1979). The changes that higher education will face in this decade and into the next century suggest that distance education units can become more influential by assisting the university to deal effectively with these changes. Although the boundary spanning role is critical, and may become even more so, distance education units have yet to convince the parent organization of their potential contributions in this particular area (Votruba 1987). Distance education has failed to fully appreciate and understand its boundary-spanning role and to develop its boundary-spanning capacity for the fuller benefit of itself and the parent organization. Distance education could correct this situation by "learning how to learn" from the increasingly heterogeneous and uncertain environment in which it finds itself.

Distance educators have traditionally attempted to learn about their environments and to obtain feedback about their programs. Articles and texts are replete with information about how to scan the environment for information, conduct internal audits, and evaluate programs. These functions customarily address the lower-level or single-loop form of organizational learning, however. In this form of learning the primary focus is on using information, judged against existing criteria or norms, to make corrections in system operations (Argyris and Schön 1978; Fiol and Lyles 1985). Negative feedback is valued most because only through the acquisition of feedback that is critical of the system can corrections be made. Positive feedback is of less use because it merely reinforces current procedure (Katz and Kahn 1978).

Although important to continuing educators, lower-level or single-loop learning is limited because it does not provide a basis for individuals or organizations to inquire into or challenge the

prevailing norms, criteria, and assumptions with which the organization works. As higher education's environment becomes more turbulent, uncertain, and heterogeneous, distance education units increasingly will need to emphasize higher-level learning, what Argyris and Schön (1978) call double-loop learning, over single-loop or lower-level learning (Argyris and Schön 1978; Fiol and Lyles 1985). In higher-level or double-loop learning, operating norms and standards of action are open to question so that they can be changed as environmental conditions evolve. Higher-level learning also has the potential for equipping distance education units to become enabling, flexible learning centers for their parent institutions.

Emphasizing double-loop learning is, however, no easy task. Several barriers can prevent organizations from learning at a higher level and thereby from tapping the potential of such learning. Some of these barriers follow:

- *Over-bureaucratization and specialization* create situations in which individuals are constrained by role definition and expectations from making innovative contributions to the organization (March and Olsen 1975; Morgan 1986).

- *Gaps between what people say they do and what they actually do* (what Argyris and Schön [1974] identify as the difference between "espoused theory" and "theory in use") are reflected in distinctions between problems that are usually addressed and problems that should be addressed in double-loop learning.

- *The tendency over time toward "ossification" of group norms and values* can reduce the possibility of higher-level learning. All groups exercise a more or less continuous selection pressure in favor of compliance and sociability (van der Molen 1989).

- *A lack of focus on noxiants in the environment* can interfere with double-loop learning. Higher-level learning by definition questions the limits that are placed on action, whether as a result of the beliefs, attitudes, and norms of the work group or as constraints imposed on the unit by its environment (Morgan 1986). In contrast to lower-level learning, which is concerned about success or failure in meeting goals and objectives and is thereby constrained by the goals and objectives themselves, higher-level learning dares to question goals, objectives, values, and the norms upon which they rest.

In addition, higher-level learning does not consider environmental constraints and demands (often contained within the boundaries of the parent institution) as givens, but rather seeks first to identify and then to reduce—if not remove—them. To the extent possible, distance educators should seek to push back constraints and have demands reduced, thereby increasing the quantity, improving the quality, and expanding the types of choices available to them about what work is to be done (Donaldson 1990). Higher-level organizational learning draws our attention to the wisdom of defining and challenging constraints and demands, thereby creating the opportunity to choose from among the limits we wish to avoid as well as from among the ends we wish to achieve (Morgan 1986).

Higher-order organizational learning has the potential for enabling distance education to better reflect higher education's changing environment and for assisting the parent institution to respond appropriately to that environment. It will also enable distance education to address more effectively issues of boundary articulation and domain determination because, through such learning, the assumptions, beliefs, and limits to action that contribute implicitly to an institution's definition of boundary and domain can be examined and addressed in perhaps novel ways. Distance education leaders and administrators must develop mechanisms to assist their units and institutions to perceive the richness and complexity of their environments. To lead effective boundary spanning units, they must also begin to focus on and foster higher-order organizational learning. However, these developments will require research into a variety of areas related to boundary articulation, domain determination, and organizational learning. Examples of these research questions include

- What form of organizational learning occurs in distance education organizations, and how does it occur?
- What influence does a focus on internal organization and management of program details and logistics have on the capacity of the unit to engage in higher order learning? What examples of role-constrained behavior are present in distance education units?
- What basic, implicit assumptions, beliefs, and limits to action undergird the manifestations of boundary permeability and boundary containment in distance education units and in their parent institutions? How do these relate to each other, and what implications do they and their relationship have for distance education?
- What underlying assumptions of the parent organization and the distance education unit place the most limiting constraints on definitions of the work of distance education units and their parent organizations?

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Collaborative Learning and Group Dynamics in Computer-Mediated Communication Networks

Charlotte N. Gunawardena

Introduction

Computer-mediated communication (CMC) has been hailed by distance educators as a medium that can facilitate collaborative or group learning at a distance. Until the advent of this technology, distance educators had been hard pressed to arrange for the learner-learner interaction (Moore 1989) and group work that has been shown to increase motivation, completion rates, student satisfaction, and, depending on the number of students in the group, even performance (Wells 1990). Research also has indicated that "effective learning should be both active and cooperative" (Davies 1989, 228).

Formal group work or collaborative learning is rare in distance education, even though attempts have been made to facilitate group activities at local study centers. Also, distance education courses, traditionally designed with a strong emphasis on learner independence, were usually self-contained. Two-way, real-time interactive technologies such as audio teleconferencing, audiographics conferencing, and videoconferencing allow for interaction between learners, but the interaction is usually on a one-to-one basis, between one learner and another or between one learner and the instructor at any one time. These technologies are not suitable for promoting cooperative learning between groups of learners located at different sites. Also, the synchronous nature of these technologies may make them unsuitable or inconvenient for many distance learners.

The asynchronous feature of CMC systems thus offers an advantage in that the CMC class is open twenty-four hours a day, seven days a week to accommodate the time schedules of distance learners. Although CMC systems may be either synchronous or asynchronous, the focus of this paper is on asynchronous CMC, because this time-independence feature is an important dimension in facilitating cooperative group work among distance learners.

CMC supports three types of on-line services: electronic mail (e-mail), computer conferencing, and on-line databases. In e-mail systems a message is routed by the system to the addressee's mailbox on the host computer and remains there until it is read by the addressee. This message can be read, replied to, left in the mailbox for later perusal, saved to the hard disk on the microcomputer, deleted, or forwarded to someone else. Most e-mail systems have a bulletin board feature that allows users to read and post messages and documents to be seen by all. However, the messages in the bulletin board system are not linked to each other and provide for only a very limited form of group communication.

Computer conferencing systems, on the other hand, provide an additional conferencing feature that supports group and many-to-many communication. In these systems, messages are linked to form chains of communication and these messages are stored on the host computer until an individual logs on to read and reply to messages. Most conferencing systems offer a range of facilities for enhancing group communication and information retrieval. These features include directories of users and conferences, conference management tools, search facilities, polling options, cooperative authoring, the ability to customize the system with special commands for particular groups, and access to databases (Kaye 1989). Databases can be made available on the same host computer that is used for an e-mail or computer conferencing system, or users can access public or private databases resident on other computers. Well-known computer conferencing systems include EIES-2, Participate, CAUCUS, Cosy Plus, VAX Notes and TEAMate.

The key features of computer conferencing systems that have an impact on distance education are the ability to support many-to-many interactive communication, the asynchronous (time-independent) features, and the place-independent features. Levinson (1990) notes that research into education via computer conferencing must be sensitive to the ways in which subtle differences in the technology can influence the social educational environment: "The importance of social factors suggests that 'computer conferencing' may be a better name for the process than is 'computer-mediated communication'...'conferencing' accentuates the inherent 'groupness' of this educational medium" (p. 7). Harasim (1989) emphasizes the necessity to approach on-line education as a distinct and unique domain: "The group nature of computer conferencing may be the most fundamental or crucial component underpinning theory-building and the design and implementation of on-line educational activities" (p. 51).

Purpose

The purpose of this paper is to review research related to the group or socially interactive nature of computer conferences, focusing on factors that affect collaborative learning and group dynamics. Additionally, this paper will provide an added dimension to the research literature by discussing insights gained from my own experience using computer conferencing on INFONET (described later) as an adjunct to a face-to-face, on-campus class.

In order to make the best use of this relatively new medium, distance educators must begin to address questions such as the following:

- How does the CMC environment improve learning?

- What types of learning take place?
- What opportunities does this medium provide for collective learning and peer exchange?
- How does the on-line environment affect group interaction and participation in discussions?
- Is this medium suitable for all learners?
- Will research in the area of communication apprehension and communication anxiety provide insights on problems that might be inherent in CMC communication?

INFONET

Graduate students enrolled in the course "TLT Distance Learning: Design and Delivery" offered on campus in the Spring of 1991 conferenced on INFONET, a computer conferencing system available to the College of Education at the University of New Mexico. The INFONET host computer system is controlled by a program developed by using TBBS conferencing software copyrighted by eSoft of Colorado. Users are guided by a series of menus that clearly outline their options while on line. INFONET provides e-mail, bulletin boards (databases of messages created by users for an audience), read-only text files, conferences (linked messages that represent an on-line discussion of a topic), and file libraries on the host system. TBBS software is used to support the national Educational Native American Network (ENAN) and CISCONET, a network linking science teachers in New Mexico.

Two separate conferences were set up on INFONET for the graduate students: one for the discussion of class topics, moderated by the instructor, and one for discussion of topics related to distance education, moderated by students. Each student moderated one topic; discussion on a total of seven topics ran the length of the semester. Solicited student reactions to the conference reveal useful insights on collaborative learning and group dynamics that will be discussed with the review of literature. Conference participants will be referred to as INFONET participants.

Collaborative Learning and Group Dynamics

Collaborative or group learning is premised on a learner-centered model that treats the learner as a participant who is active in the learning process and who constructs knowledge through a process of discussion and interaction with learning peers and experts (Harasim 1989, 1990). "Knowledge is not something that is 'delivered' to students in this process, but something that emerges from active dialogue among those who seek to understand and apply concepts and techniques" (Hiltz 1990, 135). According to Bouton and Garth (cited in Harasim 1990), learning is

an interactive group process whereby the learner actively constructs knowledge by formulating ideas into words, and then by building upon them through the reactions of others.

Peer interaction among students has been identified as a critical variable in learning and cognitive development: the conversation (verbalizing), multiple perspectives (cognitive restructuring), and argument (conceptual conflict resolution) that are a part of group learning may be responsible for greater cognitive development in groups than when the same individuals work alone (Harasim 1990). Hiltz (1990), in her evaluation of the Virtual Classroom, notes that students who experienced high levels of communication with other students and with their professor (who participated in the 'collaborative approach to learning') were most likely to judge the outcomes of the Virtual Classroom courses to be superior to those of traditionally delivered courses. "Literature on peer collaboration indicates that as ideas are presented, there is a need to actively build linkages and associations and to organize the ideas" (Harasim 1990, 45).

Brookfield (1990) observes that group dynamics are an important factor to be considered when planning for discussions and group work. Attending to the composition of the group—size, participants' backgrounds and experiences—and to factors that might influence interactions are important considerations. Group dynamics include such factors as the degree of cooperation, how the group organizes itself, and how group cooperation is achieved.

Computer conferencing is particularly suited to collaborative learning because the medium facilitates information exchange and provides the shared space essential for group work. Members of a conference can read the same message on a topic, reply to messages that can form chains of communication to be read by all, generate new messages, and share files. One must ask: How does this new environment promote collaborative learning? and How do group dynamics influence peer exchange and collaborative learning?

Building Knowledge through Learning Collaborations

If collaborative learning is to be effective, computer conferencing systems should support the ability to generate ideas, link ideas, synthesize these ideas, and build knowledge. Harasim (1990) argues that, in order to facilitate knowledge building within on-line activities, the conferencing system should support three educational processes: idea generating (and gathering), idea linking, and idea structuring. Current systems support idea generating, which includes activities such as brainstorming, information sharing, and looking at a problem from different perspectives; however, they do not adequately support the linking of ideas and the structuring of ideas necessary to build knowledge. Although messages can be linked to each other in a hierarchical fashion to

form chains of communication in current systems, the way these messages are linked is not conducive to navigating through webs of communication to synthesize ideas and create new knowledge. Part of the problem is due to the text-based nature of the medium; it does not support techniques, such as graphic concept mapping, that enhance cognitive strategies and learning. Also, the current systems do not support the free association of ideas. The integration of hypertextual and hypermedia formats into conferencing software may facilitate the building of knowledge. However, the integration of these formats will result in complex systems that might not be user friendly. Are we willing to give up user-friendly systems for more complex hypertextual environments that might endanger equal participation by novice users?

Participants on INFONET commented on the user friendliness of the conferencing system and said that this characteristic facilitated their participation as novice users. In terms of collaborative learning, they thought that the conference enhanced "understanding of the concepts presented in class and raised issues for further research and contemplation." It also helped them to "appreciate each other's differences as well as see our similarities in thinking." The participants, however, found it difficult to weave through several chains of communication in order to synthesize ideas and achieve closure. Information overload was another concern. This experience suggests that moderating one topic for a specified period of time is better than moderating seven topics for the length of an entire semester, even though the shorter time frame might limit equal participation.

Equal Participation

Active participation and interaction by group members are necessary ingredients for effective collaborative learning. Jarvenpaa, Rao, and Huber (1988) suggest that equalizing participation results in higher-quality group decisions. In organizational settings, the use of electronic media seems to increase participation by otherwise reticent members. It has been noted that the asynchronous nature of computer conferencing allows for equal participation by even the more reserved group members, unlike in a face-to-face setting where the vocal members might dominate the conversation. The asynchronous feature also allows the participants to reflect on current topics and even to consult outside resources before contributing to the conference. CMC has the potential for equitable participation; however, it does not guarantee it. Learners can be excluded by lack of access or through fear of the technology (Florini 1990). The dynamics of the group also might exclude participants. Therefore, reasons for non-participation or inequitable participation that might detract from an effective collaborative effort need to be identified.

Social Cues

The text-based nature of online communication enhances interaction among the group by reducing discriminatory communication patterns based on physical and social cues such as gender, race, socio-economic status, and physical features (Harasim 1989). This statement, however, may be only partially true. Social equality may be evident only in the initial phases of a conference. As the conference progresses, participants attach certain characteristics to messages, and this practice leads to differences in the status of participants.

Phillips and Pease (1987) note that a computer conference that linked high-level professionals in business and academia to discuss top-level management yielded intriguing insights into social interactions on CMC. Participants complained about feeling ostracized for expressing opposing views or opinions. This ostracism was conveyed subtly: opposing points of view were ignored rather than criticized. Those who complained were not worried about getting into arguments, but were concerned about being left out. Much of the discomfort expressed by participants who had become only marginally involved in the conferences stemmed from a perception that there was indeed an established "in-group" who tended to converse on the "same intellectual level," making it hard for a "weaker" person to break in. One person entered the seminar expecting to find a brotherhood, but instead discovered a "rigid hierarchy that appeared intimidating" (Phillips and Pease 1987, 49).

An INFONET participant made the following observation: "When I received a message, I felt the need to immediately respond, making it a dialogue between two people rather than either waiting until more people responded or trying to draw others into what was said." This same participant continued, "I am aiso hesitant to enter into a response from another member to the moderator (originator) as it seems to be more of a dialogue between the two." These observations make us look closely at communication patterns in CMC, and point to the need for communication models (protocols) that provide clear guidance to participants on how to interact in a computer conference.

Computer conferences generate complex social environments. The social interactions tend to be unusually complex because of the necessity to mediate group activity in a text-based environment. Failures tend to occur at the social level far more than they do at the technical level. Feenberg (1989) points out that current conferencing systems, despite their complexity and variety, are not yet designed as social environments: "The software's social architecture determines the success of group communication just as the location of chairs, tables, blackboards, podiums, affects more traditional forms of human interaction" (Feenberg 1989, 29). Therefore, he argues, research into "social factors" and advancements in "groupware" (a combination of group process and software

that characterizes a network as a communications system) will provide better social environments for computer conferencing.

Social Cohesion

Research has indicated that a minimum amount of social cohesiveness is required for the effective performance of a group task (Davies 1989). The unpredictable time lag between sending and receiving messages in a computer conference makes achieving this cohesiveness difficult. This shortcoming in the educational environment negatively affects collaborative work.

"Conferencing dynamics involve the management of time, both the personal time of the participants and the overall time of the conference" (Feenberg 1989, 27). The characteristics of the medium create some difficulties for the participant in maintaining a clear picture of the discussion over time. Spreading a discussion over a longer period of time introduces difficulties in keeping an overall perspective of the discussion as a whole (Romiszowski and de Haas 1989). Ironically, this very feature of being able to spread a discussion over time is considered to be one of the unique advantages of the on-line environment. The ability to "chew over" an idea and come back to the conference with a new and different perspective is seriously hampered when on-line discussions are limited to specific time periods.

Communication Anxiety

"Communication online involves a minor but real personal risk, and a response—any response—is generally interpreted as a success while silence means failure" (Feenberg 1989, 23). In the absence of non-verbal cues to support communication, communication anxiety results when no immediate responses are received for a participant's comments, ideas, or questions.

A participant on INFONET sent a private e-mail message to the instructor imploring the instructor to respond to a question she had posted on the forum. This participant expressed the feeling of speaking into a vacuum and the fear that her peers did not care enough to recognize her contribution. Another participant observed, "CMC is like talking for the first time in front of an audience. Although in the case of CMC there is no audience (physically present), one feels equally nervous, maybe more." Since CMC messages are lodged instantly in the central computer, we feel an intense need for response when we send a message. "This technical improvement, which makes rapid exchanges possible, also makes unusual delay a sign of rejection or indifference" (Feenberg

1989, 24). Therefore, standards for behavior in computer-mediated communication place a premium on active participation and are often critical of "lurkers" or passive readers.

Exploring "discussion" as an adult teaching method in a face-to-face classroom, Brookfield (1990) observes that facilitators who use discussion generally do so with the belief that most members must be actively involved for the discussion session to be successful. This participatory rationale for discussion comes dangerously close to a "cocktail party" conception of interaction. Valuing verbal contributions and active participation for their own sakes may lead to judging the success of a discussion session by the number of contributions made. Yet, as Rogers (1977) points out, "Not all discussions need to be noisy or obviously vigorous to be educationally valuable. A good discussion may be quiet, apparently low key, with a lot of thoughtful silences" (cited in Brookfield 1990, 191).

Conducting discussions using a text-based, on-line medium devoid of non-verbal cues leads to communication anxiety for some participants, especially for those who perceive of themselves as poor writers or for non-native speakers of English. As one INFONET participant observed,

> For me oral communication is less structured, more spontaneous, somebody expresses an idea and one can respond to it immediately, not caring too much about the 'literary' style. Moreover, we not only communicate ideas through words, but also through non-verbal communication. However, in CMC our mode of communication has to change. What was spontaneous orally, is less spontaneous in CMC. I think that from our group, Mikael was the only one that tried to incorporate sounds to his writing and, although at times distracting, the communication did not feel that impersonal. You could actually 'hear' the message.

This INFONET participant suggested that, in order to motivate people to participate and get used to CMC, conferences should begin with light topics, maybe an electronic cafe-type of conversation in which writing skills are not challenged. "Ice breakers" that can be used in CMC are also useful. Training students in the use of the medium and making them comfortable with it is crucial to the success of collaborative learning.

McCroskey (1984) defines "communication apprehension" as "an individual's level of fear or anxiety associated with either real or anticipated communication with another person or persons" (p. 13). He further observes that people develop expectations with regard to other people, to situations, and to probable outcomes of behaviors such as communicating. To the extent these expectations are found to be accurate, the individual develops confidence. When expectations are found to be inaccurate, new expectations need to be developed. When no appropriate expectations can be developed, anxiety is produced. Fear results when expectations are produced that entail negative outcomes that are seen as difficult or impossible to avoid. These factors contribute to communication apprehension.

Therefore, participants in computer conferences should be informed of the unique features of the medium and of the problems associated with communicating through this new medium. Giving participants an orientation to CMC, introducing them to communication protocols, encouraging participants to introduce themselves early in the conference, and creating a comfortable environment for participation will alleviate the communication anxiety experienced by some participants. Further research is needed to develop a communication model for this medium. Research in the area of communication apprehension also may provide useful insights for dealing with communication anxiety on electronic networks.

Role of the Moderator/Facilitator

An active moderator who is capable of skillfully leading a computer conference can overcome some of the deficiencies inherent in on-line communication. The moderator should attempt to relieve the communication anxiety experienced by participants by issuing warm invitations and sending encouraging private messages. Feedback and acknowledgement of initial messages are crucial to making people feel comfortable about participating in the conference. Since collaborative learning activities such as seminars, working groups, learning partnerships, and team debates use cooperative task structures based on active learner participation and peer interaction to achieve a common goal, the moderator should frequently summarize or clarify what has been taking place and try to express the emerging consensus of the group. These "weaving comments" supply a unifying overview and synthesis of the discussion. A conference is doomed to failure without an active moderator. The strong leadership of the moderator must compensate for the missing cues in the medium.

Feenberg (1989) notes that the moderator's most basic task is to choose at the outset a "communication model" for the group. In the absence of visual cues, on-line moderators must try to reduce the strangeness of the medium by selecting a familiar system of roles and rules derived from everyday life. He points out that moderators play an important role in initiating and sustaining meta-communication, that is, communication about communication. Whenever communication problems arise, participants must overcome their inhibitions and demand explanations of unclear messages, call attention to information overload, request clarification of the tone of the message, and suggest changes in the rules of the conference.

Instructors who are beginning to use CMC as a medium of instruction should make an attempt to learn the skills of an effective on-line moderator. Teaching through this medium also requires a change of role from the "deliverer" of information to that of active and equal participant. In a CMC

environment, "the instructor is more of a facilitator of group communications, organizer of group learning activities, and resident consulting expert " (Turoff 1990, xii).

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Identifying Performance Improvement Prescriptions for Distance Learning and Teaching: Quantitative and Qualitative Approaches

M. Winston Egan, Joan Sebastian, Marshall Welch, and Brent Page

Introduction

Distance educators are increasingly interested in improving the performance of distance learners as well as the perceptions learners have about their educational experiences (Benko de Rotaeche 1987). Additionally, these educators are committed to evaluating the relative efficiency of their instructional programs in meeting specific learner needs, achieving certain instructional outcomes, and addressing identified problems (Chute and Balthazar 1988; Melton 1976; Hackman and Walker 1990).

Results of research on learner achievement in various distance education contexts are generally positive. Learners at a distance seem to perform as well as learners in conventional settings on standard measures of achievement (Verduin and Clark 1991). However, some persistent problems have been identified. These include higher dropout rates than those in conventional education settings, levels of learner motivation that do not contribute to persistence in completing courses, and the perception by learners that distance-delivered courses may be too difficult or challenging (Chacon-Duque 1987; Garrison 1987). Verduin and Clark (1991) suggest that some of these problems may be addressed through improved support systems and improved learning materials. Others have suggested that some of the problems may be addressed through improved course design and instruction (Hackman and Walker 1987).

The actual identification of performance improvement prescriptions for distance education through course design and adapted instruction has been quite limited (Wagner 1990). Researchers in the field have been more interested in "macro" questions, such as "How effective is distance education in comparison to conventional education?" or "Do students at a distance achieve at the same levels as students who receive their instruction face-to-face?" The "micro" questions such as "What specific course design components contribute significantly to student achievement?" and "What specific teacher behaviors are critical to learner success and engagement?" have not been fully addressed. Sparkes (1985) captures the essence of the problem: "The Open University is rich in evaluation data stating which courses are good or bad or interesting and which teaching components are favored by students. But the data seldom reveal what it was that made them good or bad, so [the data] are difficult to use in the course design process" (p. 3).

Research dealing with instructional design and development in distance education is beginning to be "fine tuned." Researchers are becoming increasingly interested in isolating the precise instructional features that contribute significantly to positive outcomes for distance learners as well as for their instructors. The purpose of this paper is to review a variety of quantitative and qualitative approaches that have been used by researchers and course developers in the Department of Special Education at the University of Utah to improve learner outcomes and perceptions.

First Steps

Our first steps were directed at answering some of the macro questions alluded to earlier. We wanted to know how student perceptions of our distance education courses compared to perceptions of our on-campus courses. Additionally, we were interested in comparing the actual performance of learners at a distance with that of on-campus learners on objective measures of achievement.

In addressing these and related questions, a variety of quantitative analysis techniques (analysis of variance and covariance, multiple regression analysis, etc.) have been used. However, as we began to review the information derived from these techniques, we discovered that they did not provide us with the information needed to improve our course designs, learning materials, and course-related communications. At this juncture we began to explore other approaches for collecting and analyzing information that would assist us in improving our instructional programs.

What follows is a brief discussion highlighting the ways in which we used selected quantitative and qualitative approaches to identify, develop, and implement performance improvement prescriptions. Additionally, we demonstrate how these studies influenced course designs, learning materials, instruction, and the perceptions of learners.

Quantitative Studies

From the inception of our distance education program, we made a consistent attempt to carefully evaluate each course offered to both on-campus and distance learners. We employed three types of assessment approaches to generate data: a department course evaluation (see Figure 1), a media evaluation developed by the Instructional Media Services division of the university (see Figure 2), and scores obtained from objective tests administered in each course. The department course evaluation and media evaluation instruments are Likert-scale instruments accompanied by a number of open-ended questions. Ratings generated from these evaluation instruments were

Instructions: Circle the number that most closely reflects your evaluation of each area.

1. Overall rating of the instructor's teaching effectiveness.

Poor						Excellent
1	2	3	4	5	6	7

Comments:

5. Provision of feedback relating to student progress.

Poor						Excellent
1	2	3	4	5	6	7

Comments:

Figure 1. Selected Items from the Department Course Evaluation

INSTRUCTIONS: In order to help us determine the effectiveness of the televised course you are taking this quarter, please answer the following questions. Circle only one category per question.

1. How would you rate this telecourse compared to a conventional course?

Inferior		The Same		Superior
1	2	3	4	5

2. How would you describe the level of difficulty of the telecourse?

Inadequate		Sufficient		Overloaded
1	2	3	4	5

4. How well organized was the content of the telecourse?

Disorganized		Organized		Very Well Organized
1	2	3	4	5

5. How clear and understandable was the content presented through the telecourse?

Not Clear		Clear		Exceptionally Clear
1	2	3	4	5

14. Did the course hold your interest?

Not Interesting		Moderately Interesting		Highly Interesting
1	2	3	4	5

Figure 2. Selected Items from the Instructional Media Evaluation

analyzed using parametric techniques. We assumed that on-campus and distance learners rated their courses in much the same fashion; that is, that they used common approaches in making their ratings.

In our first quantitative study, distance learners rated "the provision of feedback related to student progress" significantly lower than did the on-campus students (see Figure 3). We were interested in locating the potential sources of this difference in order to improve this instructional outcome. Because we were unclear as to the precise actions we should take in addressing the feedback problem, we took a number of steps to improve the quality and timeliness of feedback provided in the next two courses. The impact of these actions can be observed in Figure 3, which shows the mean rating scores for "provision of feedback" for courses 1, 2, and 3. As is evident from the graphic display, we were able to substantially alter the perceptions relative to feedback not only of distance learners, but also of their on-campus counterparts. Moreover, we were able to achieve similar changes in learners' perceptions on a variety of other course factors: overall teaching effectiveness, comparison to a conventional course, and organization of the course (see Figures 4, 5, and 6).

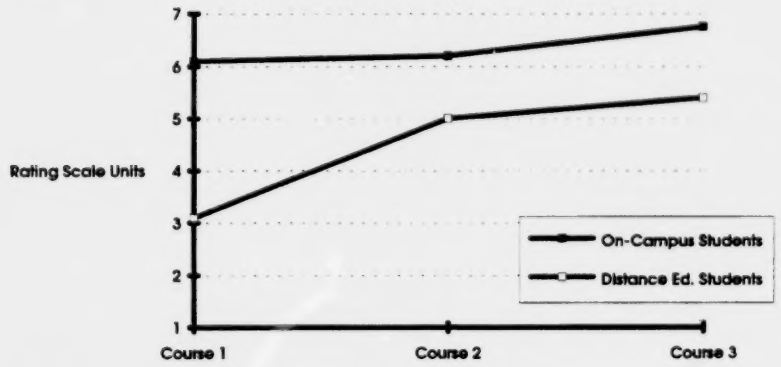


Figure 3. Mean Scores for the "Provision of Feedback Related to Student Performance"

In Table 1 (see Appendix), we have identified the changes made over the three-course sequence to improve students' ratings and outcomes. These changes included altering examination formats, improving the organization of course presentations and materials (student manuals, handouts, etc.), using on-site facilitators, delivering feedback more promptly, using student input in developing various course components, and providing some face-to-face, on-site instruction. At this time, we are unable to suggest which specific actions accounted for each of the positive changes in students' perceptions. The lack of formal experimental controls in these studies obviously limits the conclusions that can be reached about cause and effect relationships.

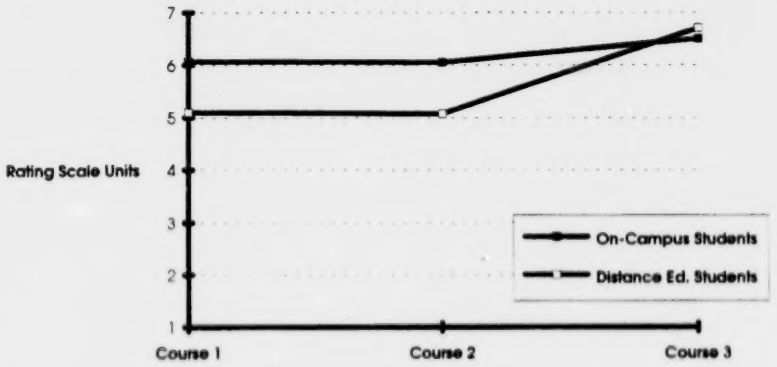


Figure 4. Mean Scores for "Overall Rating of Instructor's Teaching Effectiveness"

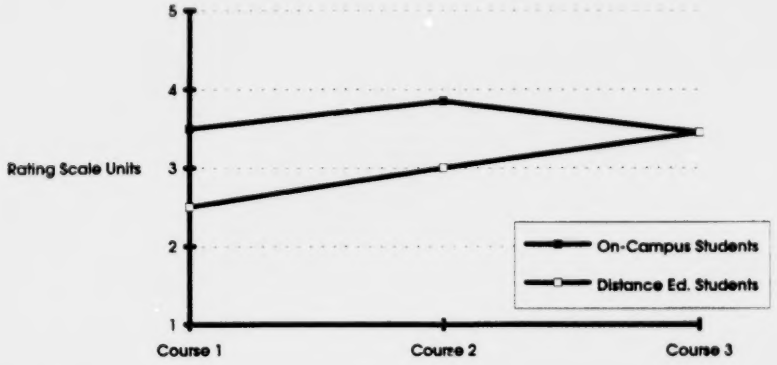


Figure 5. Mean Scores for "How Would You Rate this Course Compared to a Conventional Course?"

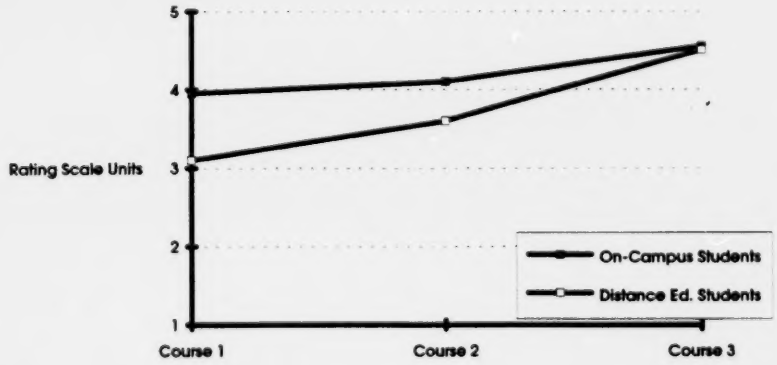


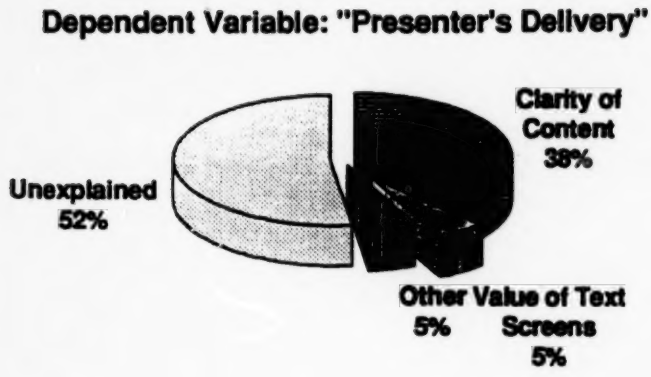
Figure 6. Mean Scores for "How Well Organized Was the Content of the Course?"

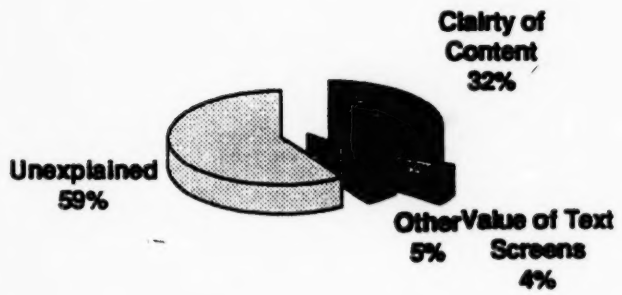
However, the adjustments made in each subsequent course appear to have addressed some of the problems identified earlier by the quantitative studies.

Problems surface when one analyzes significant findings in quasi-experimental studies, particularly if the goal is to develop concise prescriptions for course design and instruction. For example, assume that we have just completed an evaluation of a course delivered simultaneously to on-campus and distance learners. The distance learners received their instruction via two-way interactive television, and the on-campus learners received their instruction face-to-face in a television studio. In our analysis, we found that the on-campus learners' mean rating on the item dealing with "organization of the course content" was significantly higher than the mean rating of the distance learners. Distance learners perceived the course content as very disorganized. Additionally, the amount of variance accounted for in this particular comparison was about sixty percent. Given this finding, we were eager to make some changes, but were uncertain as to what changes or prescriptions would address the problem. Unfortunately, information about the standards or criteria distance learners used in making their ratings was unavailable. In other words, it was not clear what students had in mind when they characterized the course content as "disorganized." Therefore, we had to make educated guesses as to what actions might improve the organization of the course content. Had we been able to exercise more control in selecting and assigning students to various treatment conditions involving course design and communication, our prescription development task would be much easier. This short scenario is illustrative of the problems we have encountered in attempting to improve our course designs and instructional activities with findings generated from quasi-experimental studies.

Another quantitative study also illustrates this point. This study was designed to help us understand some of the critical features of distance education, particularly as they relate to various course design elements. We analyzed several factors (presenter's delivery, comparison to a conventional course, and holds student interest) purposely selected for multiple regression analysis. These factors were treated as dependent variables.

Figure 7 provides a graphic representation of our findings relative to each of the previously identified dependent variables. We found that one independent variable, clarity of content, was significantly and consistently correlated with three of the identified dependent variables. Additionally, clarity of content accounted for a large percentage of the explained variance in each regression analysis. This finding was difficult to interpret in terms of developing course improvement prescriptions because we did not know what features students had attended to in rating the question dealing with clarity of course content. These and other experiences with our quantitative studies prompted us to consider other approaches to solving our instructional problems.




Dependent Variable: "Compared to a Conventional Course"
Clarity of Content 32%
Unexplained 59%
Other 5%
Value of Text Screens 4%

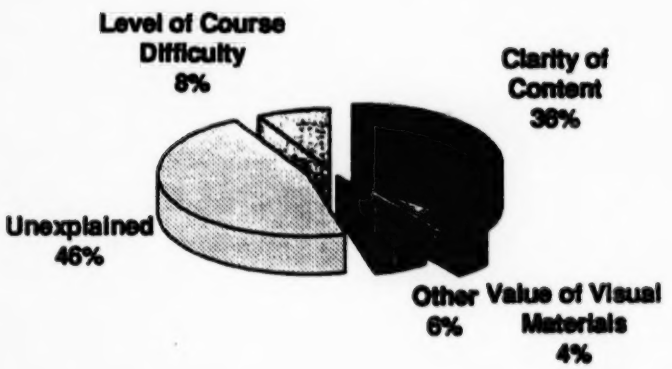


Figure 7. Regression Analysis of Selected Factors (Presenter's Delivery, Compared to a Conventional Course, and Holds Student Interest)

Qualitative Studies

Our quantitative studies helped us identify certain problems and areas of concern related to various course design and instructional features. However, the answers generated for these problems were not precise enough to help us modify our course designs or other related learning activities. Our experiences with our quantitative research paralleled those reported by Reeves (1991): "Unfortunately, the adoption of experimental and quasiexperimental evaluation designs is not adequate to provide sufficient information for making future media selections nor to guide course descriptions" (pp. 100–1). Given the limitations associated with our quantitative studies, we began to explore other approaches potentially better suited to the nature of the instructional problems we were examining.

A member of our evaluation team was an experienced qualitative researcher. At his suggestion, we decided to conduct two qualitative studies using focus groups composed of experienced distance learners (Krueger 1988; Moore 1987). These learners had completed approximately forty-five quarter hours of distance education coursework through various television delivery systems and, consequently, were seasoned distance learners.

Our major goal in completing the focus group studies was to address the question: "What makes a difference in televised instruction?" Our secondary goal was to gather information about the ways in which distance learners made decisions about rating certain course and media evaluation items. For example, we asked these learners to talk about the factors they considered in rating clarity of content or overall quality of the teaching in each course.

The focus group interviews were videotaped and later transcribed. Standardized quantitative analysis procedures (independent review by several investigators, identification of potential trends, confirmation and validation of trends with appropriate data, and synthesis of the findings) were used in reviewing the information and developing recommendations and prescriptions for course design and instruction.

Three major themes emerged from the focus group analysis: 1) instructor/instruction, 2) group dynamics, and 3) facilitator support. Each theme was supported by comments that later were used to develop specific performance prescriptions (see Tables 2, 3, and 4 in Appendix).

The first major theme identified during the analysis—instruction and instructor behavior—was illustrated by responses in three areas: 1) comments about the preparation and organization of the course; 2) responses related to the instructor's presentation and teaching skills; and 3) issues related to the kinds of interaction that occurred in televised courses (see Table 2 in Appendix). Examples of the specific nature of these responses follow:

> I think over the television they have to be more organized. They have to know ahead of time what they're going to do and be even better prepared.

It was really helpful, I thought, to have different visual things....I personally prefer it when the instructor is conscious of the camera and will speak to [it] as well as his class.

I really like the two-way where the professor was able to see us and communicate with us at the same time we could see him.

I didn't really miss personal interaction with the instructor. However, that option was always available. If you had a question you could call them or call the facilitator.

A second exciting theme emerged from the analysis. The participants spoke at length (see Table 3 in Appendix) about the importance of participating with a group of colleagues during their learning experience:

We were a support group. When the videos went off...or when class was over we could discuss...

We went over assignments...we supported each other...we helped each other through.

Finally, participants described the importance of distance education site facilitators, as illustrated in the third theme (see Table 4 in Appendix). Participant responses focused on what an effective site facilitator does in terms of preparing, structuring, and supporting televised instruction:

The advantage of facilitators as I saw it was to be a resource to you.

We had a facilitator sitting with us that would help us if we had any questions.

Because of the precise nature of the information generated from the focus group interviews, we were able to develop and implement specific performance improvement prescriptions.

We are now beginning to use the information derived from the focus group studies to address some of the problems that were identified through our earlier, quantitative studies. Additionally, we are planning to conduct several other focus group studies to examine the perceptions of course facilitators regarding what makes television instruction effective.

Summary

The development of performance improvement prescriptions for distance education and learning is a multifaceted and complex process. The careful examination of course design and instruction in distance education is in its infancy. In some ways, this immaturity is a function of the many new technologies and delivery systems now available to distance educators.

As educators and researchers, we have been preoccupied with the "macro" questions of effectiveness. It is now time to examine the "micro" questions of instruction. Many of the "micro" questions are best addressed with qualitative approaches. They provide "the fertile ground for discovering hints and developing creative ideas which can gradually improve the design and ultimate effectiveness of instructional treatments" (Reeves 1991, 90).

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Table 1. Course Design Features of Distance Education Courses 1, 2, and 3

COURSE 1	COURSE 2	COURSE 3
1. Weekly Quizzes	1. No weekly quizzes (midterm and final examinations)*	1. Weekly take home quizzes (midterm and final examinations)*
2. Course materials delivered weekly	2. Course materials delivered weekly	2. All course materials present at the first class session.*
3. No on-site facilitators	3. On-site facilitators*	3. Active use of on-site facilitators*
4. Relatively slow feedback relative to course assignments and exams	4. Improved, more promptly delivered feedback*	4. Prompt feedback on course assignments, etc.*
5. No student input on course components and assignments	5. Student input regarding course components and assignments*	5. No student input regarding course components and assignments.
		6. On-site face to face instruction provided to two of the three remote sites for one course session*
Same Instructor for Course 1, 2, and 3		

* Changes that were made in the course design features of courses 2 and 3 based on data collected from the various evaluation instruments and other informal feedback.

Table 2. Focus Group Study Results: Instructor/Instruction

PREPARATION AND ORGANIZATION

- Carefully constructed syllabi
- Study guides prepared in advance
- Well designed handouts and support materials
- Skillfully sequenced presentations/lectures

PRESENTATION AND TEACHING SKILLS

- Distance learners appreciate and enjoy videotapes, live demonstrations, slide presentations and other media
- Modest and /or correct use of the blackboard
  - Legible lettering/writing
  - Appropriate camera positioning and wait time
  - Coordination with technical staff in making blackboard visuals work well
  - Well conceived handout materials preferable to blackboard centered presentations
- Relating directly to distance learners through television cameras
  - Look directly at distance learners
  - Engage distance learners with questions, comments, direct learning activities, etc.
- Pacing (not too slow and not too brisk)
- Instructor movement should be natural and suited to the learning activity at the time
- Comments and questions made by on-campus as well as distance learners should always be repeated
- Distance learners very much value a sense of humor in the on-campus instructor
- Distance learners appreciate on-campus instructors who appear to be "comfortable" or at ease with television teaching

INTERACTION

- Interaction is perceived and valued in different ways by distance learners
- "Just knowing that I could contact someone if I had a question was sufficient."
- Facilitators often meet the needs for interaction that may not be met by the on-campus instructor
- Distance learners themselves often provided the interaction that was desired for assignment clarification, projects, and other related items
- The interaction that seems to receive the greatest amount of attention is feedback regardless of its source (facilitator, on-campus instructor, other distance learners, etc.)

Table 3. Focus Group Study Results: Group Dynamics

- Learning groups are essential to the success of distance learners
- Effects of the group:
  - Promotes support and confidence in individual group members
  - Fosters learning that is more robust and expansive than learning completed individually (synergistic effect)
  - Promotes motivation across a variety of learning activities
- Learning groups provide a solid source of support for:
  - Discussions
  - Getting trivial and important questions answered
  - Believing that they could successfully pass the class
- The size of the learning groups was optimal—not too large, not like some large university classes
  - The size of the groups promoted the free flow of question asking and comment making
  - The groups were informal
  - Students in these groups exercised more control over their learning
  - The groups often determined the direction, scope, and nature of the learning activities
- The group often provided the motivation to "stay with" the certification program until its conclusion
- Groups often perceived the on-campus instructor to be part of the group even though he/she was not physically present

Table 4. Focus Group Study Results: Facilitators/Instruction

- They should:
  - be knowledgeable about the instructor's expectations
  - be trained regarding their roles and functions
  - be comfortable with the operation of the VCRs and be able to respond to typical problems associated with the video player and monitor
  - be comfortable with the support materials
  - preview all instructional and media tapes
  - have prior contact with the instructor prior to the beginning of the course
  - receive their support materials well in advance of the starting of the course
  - have regular contact with the on-campus instructor

- A number of opinions were expressed regarding the grading and evaluation of assignments, projects and exams.
  - Some felt that facilitators should not be involved in the grading process because of preexisting friendships, administrative/supervisory relationships, etc.
  - Others made no comments about the grading completed by facilitators

- Role/Functions of Effective Facilitators:
  - active participants, not merely persons who turn on and turn off the equipment
  - discussion leaders
  - comment makers
  - clarifiers
  - interpreters
  - assignment adjusters
  - "appropriate exercisers of authority"
  - advocates for the distance learner

Designing Policy Tools for the Third Generation of Distance Education

Gary E. Miller

Introduction

Articles by Joseph Pelton (1991) and Tony Bates (1991), prepared for the International Council on Distance Education conference in Caracas and reprinted together in *Research in Distance Education,* raise important issues about the role of technology in distance education. While the issues are of immediate interest to those in the distance education community, the differences between the two reflect the dilemma facing state and national policy makers as they attempt to find new footing for educational policy.

Pelton reflects the view of the technologists, who tend to see technology-delivered education as a distinct phenomenon, so distinct that it requires a new name—"tele-education"—to describe it. Although he notes that "if tele-education is to work in a systematic and effective way, then software needs to be given priority over hardware" (p. 4), Pelton himself tends to emphasize hardware. His message is that technology holds the potential to solve worldwide educational and social problems, that it offers "a new hope for humanity" (p. 9). He suggests that effective use of the technologies will require massive changes in how education is managed.

Pelton argues that "the current state of the field of tele-education is probably best described as pre-adolescence" (p. 8). Tony Bates, on the other hand, argues that "tele-education" is more in line with the "third generation" of distance education envisioned by Nipper (p. 11), the first two generations being correspondence study and the multi-media approach that characterizes open learning programs. One could take that image a step further and argue that the extensive use of technology represents a fourth generation of education generally, with the first being traditional classroom instruction.

While Bates, speaking from an international perspective, notes that many new institutions have developed around the use of distance education methods, this situation does not prevail in the United States. Instead, most distance education in the United States is embedded in otherwise-traditional colleges and universities (although often, but not always, housed in the nontraditional continuing education offices of these institutions). As a result, these institutions are now operating outside their traditional service areas and are forming consortial relationships with other institutions in order to serve students.

Two issues—increasing diversity and complexity of the telecommunications environment and the development of distance education capabilities in otherwise traditional institutions—are the source of most policy issues at the state and national levels. Distance educators usually consider the arguments of Pelton and Bates in terms of program development, yet there is another "audience": state regulators, regional accreditors, state and national legislators, and policy makers. These groups must decide whether to focus on technological or educational distinctions in setting policies, and they need well-researched criteria upon which to base decisions. Policy research can be of immediate, practical benefit to these groups.

Organizing for the Next Generation of Education

Bates notes that distance teaching institutions that had made a commitment to the "industrial" model of distance education had particular difficulty in responding to the opportunities presented by the new interactive technologies (p. 11). In recent years, the more traditional institutions have had little difficulty in seeing interactive technologies as a way to extend education by simply extending the traditional classroom approach. These institutions, often suspicious of the "packaged education" represented by the industrial model, have been more accepting of interactive technologies, especially interactive telecommunication.

As a result, telecommunication-based distance education has become an important aspect of emerging statewide telecommunications networks and consortia. The number of these new organizations is impressive. A recent survey by the National University Telecommunications Network (1991) was mailed to ninety consortium-type organizations at the state level and generated responses from thirty-one.

Most of the available research on statewide networks is descriptive and tends to emphasize statewide needs assessments, reports related to state activities, or multi-state surveys. However, if these organizations are to fulfill their potential, other, more in-depth, policy research is needed. Perhaps most needed are organizational effectiveness studies to examine different models of statewide telecommunications organizations over time. Such studies should look at how the organization of the network affects participation by various educational agencies, related policy development, unforeseen organizational and support needs, and instructional effectiveness.

Organizational effectiveness studies should establish criteria that government agencies can use to help plan networks and, perhaps more important, to plan for the organization of networks and the coordination of educational and non-educational applications of state-owned technology. Obviously, individual organizational decisions reflect the local situation: what already exists, what

has been tried and has failed in the past, inter-agency conflict, etc. However, without any point of comparison, moving beyond these factors is difficult.

On another level, Whittington (1990) has outlined general guidelines for effective statewide telecommunications planning. The results of longitudinal organizational effectiveness studies should result in more specific guidelines to help foster a less politicized decision-making process.

Organizational research that focuses on both organizational and policy issues should result both in models of effective organization and in guidelines to help states develop organizations that best respond to the needs, resources, history, and culture of an individual state.

Definition as a Policy Research Issue

Organizational decision making is further confounded by a lack of shared language and vision for distance education at the state and national levels. While the American Council of Education/Alliance and the Independent Study Division of the National University Continuing Education Association both have set forth principles of good practice in distance education, and while Project ALLTEL has resulted in guidelines for policy development within the accrediting community, a great deal of work remains to be done.

Many of the key issues affecting the regulation of distance education at the state and regional levels were raised in November 1990 at an Invitational Symposium on Emerging Critical Issues in Distance Higher Education, sponsored by the Institute for Distance Learning at Regents College in New York. The symposium brought together representatives of state higher education commissions, regional accrediting agencies, colleges and universities, distance education providers, and corporations. The symposium produced three "consensus issues" and a number of supporting action items. Consensus was achieved on the following recommendations:

- In addressing issues of standards and quality, providers, accreditors, and regulators should focus on learner needs rather than on particular technologies. There is a need to recognize that distance education technologies represent part of a broad array of tools now available to higher education and that quality standards must apply broadly.

- Regulating and accrediting agencies should develop ways of cooperating among states and regions to facilitate approval while insuring quality in distance education programs that cross state and regional accrediting lines, with a goal of advancing distance education while protecting the consumer.

- There is a need for a national research and policy leadership agenda for distance education (Institute for Distance Learning 1990, 63–64).

Several actions—including a followup conference sponsored by the accrediting organizations—have resulted from this symposium and promise to foster a more sympathetic

regulatory environment for distance education. The symposium also heightened the awareness among those in the regulatory community of the new responsibilities that accompany the disappearance of traditional geographically defined service areas.

However, the dialogue among the disparate groups represented at the symposium also pointed to the need for additional research to facilitate further policy development. There is a critical need for a common language that regulators, accreditors, and providers can use to establish workable policy. Much of the language used by state-level regulators, for instance, uses the classroom as a point of reference. Still lacking is a common vocabulary attuned to the new technological environment. Educators and policy makers alike need to develop language that allows regulators to apply the spirit of existing regulations to all technologies rather than to discourage potentially effective innovation by forcing a comparison to classroom instruction.

Development of such a language requires well-considered research that first should compare existing regulations among several states. Next, it should examine the history of key regulations in order to separate the core issues from tangential references to delivery systems. Third, it should compare these issues to professional standards in distance education and suggest new language that retains the spirit of the original regulation using technology-free language. Finally, such a project should also provide examples of ways in which distance education and traditional education meet or fail to meet the spirit of the regulation, thus providing a more common ground for policy interpretation.

Similarly, research is needed to develop practice-based, operational definitions to guide policy makers. Definitions should be accompanied by examples that illustrate the meaning of the terms and that draw distinctions among terms. At the most basic level, policy makers must be able not only to distinguish the relationship of "telecourses" to "teleconferences" but also to have working definitions that allow them to make distinctions among such "apples and oranges" as "television program," "interactive television," "videotape," "ITV," and "compressed video." The issue of definition goes deeper than distinguishing among technologies, however. Distance education providers and accreditors tend to use different terminology and to bring different assumptions to what appear to be commonly held definitions.

An exchange at the Institute for Distance Learning Symposium illustrates the point. Marjorie Peace Lenn of the Council on Postsecondary Accreditation had defined distance education as a component of off-campus programs. However, when given the situation of a "candid classroom" ITV program delivered simultaneously on campus and off campus, she suggested that this example would fit the accreditors' definition of "contract instruction" (Institute for Distance Learning 1990, 27). The language used by distance educators to define different types of distance education and the language used by accrediting organizations to define different types of institutionally sponsored programs do not correspond closely. A careful cross referencing of terminology used by

providers, regulators, accreditors, and clients is needed to improve communication and interpretation of existing policy and to provide a basis on which to build future policy.

Conclusion

Most research in distance education deals with instructional effectiveness or administrative issues. Much of the writing on policy tends to be either advocacy or description. The kind of research suggested here differs from previous research in several ways. First, this research is not directed to improving practice within the field, but rather to improving the environment in which distance education operates. Its goal is to provide models that policy makers can use to build a more effective policy structure. Such research requires different skills and a broader understanding of both the educational and political spheres in which institutions operate. However, research results could help create greater understanding of the emerging role that distance education is playing in the educational mainstream.

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Research-Based Approaches to Dealing With Student Attrition: Experiences at The American College

John W. Bajtelsmit

Introduction

Student dropout from distance education is a serious problem that has a number of important implications for students, as well as for institutions. From a student's point of view, the negative effects of dropout are obvious: loss of opportunity for personal and career advancement, lowered self-esteem, and increased likelihood of future disengagement. These personal, occupational, monetary, and social losses are not the only costs of dropout, however. From an institution's point of view, its very survival may be at stake. Keegan's (1986) economic analysis has indicated that the viability of an educational institution depends very directly on the number of dropouts in its system, a point also made by Daniel and Marquis (1979). To underscore this point, The American College (TAC), a financially stable distance education institution for almost sixty years, experienced an increasing attrition rate in the early 1980s that was the basis for a truly startling financial projection: a trend toward an annual operating deficit of over $2 million within just a five-year period. The financial impact of student dropout has been increasingly significant; in 1982 the dollar value was $69,000 per percentage point of attrition, in 1988 it was $160,000 per point, and currently the value stands at almost $200,000 per point. Clearly, attrition can be a deficit-producing trend that can threaten the very survival of a distance education program.

It has been twenty years since the first research on student attrition was conducted at The American College. This paper attempts to provide a brief overview of the approaches that have been used and some of the findings that have resulted. Although these studies do not represent a single systematic and continuous research program, they do, to some extent, build on one another and, perhaps, show some evolutionary development. Reports on this research, while widely disseminated at the time, may not be widely known at present. It is hoped that this summary will sharpen interest in the problem of attrition and serve as a basis for future research and interventions to tackle this important problem.

This overview, based on an extensive literature search of American College Research and Evaluation Department reports, will limit itself to formally conducted and documented empirical research. Specifically excluded are the many ad hoc interventions often characterized as "action research." Most of the efforts described here can be considered as applied research and program evaluation studies, although some have had a more theoretical basis oriented toward a better

understanding of the phenomenon of student dropout in distance education. It is to be hoped that this research can be generalized to other higher education and distance education settings.

Measurement and Tracking: Development of Information Systems

Simple Input-Output Measures. Since it takes an average of about five years to complete our Chartered Life Underwriter (CLU) professional designation program, a very simple measure of attrition can be derived by dividing the number of designations (professional certifications in the financial industry) awarded by the number of students matriculated five years earlier. This method yielded an attrition rate of about 55% for students in 1975, and 78% in 1984. Changing the lag time results in some variation, but the overall trend shows a consistent increase in attrition. Since 1984 attrition has decreased; in 1988, for example, it was 66%. Although attrition rates have varied over the past twenty years, on average, about seven of ten students dropped out during that time period.

Computerized Monitoring Systems for Student Flow. The need to develop more detailed measures of attrition lead to the development of a sophisticated computerized monitoring system called the ACCUTRACK (American College Comprehensive Uninterrupted TRACKing) System. Student activity has been monitored at a micro level of detail in an attempt to obtain a better conceptualization of the basic problem and its causes and solutions. Longitudinal results from this system indicated that most attrition occurs early. Within the first half year, attrition rates varied from 10% to 20% and more; after one year, it was stable at approximately 60%. More significantly, this approach provides a segmentation of the attrition problem, suggests causes for attrition, identifies targets for interventions, and focuses solutions on high-payoff segments. The system was designed to provide "leads" to Student Services, Teleregistration, and special Attrition Intervention projects. Additionally, it provides a framework was for assessing the effectiveness of these services and interventions. A switch from a semester calendar to a quarter system has halved the timeframe for student activity and doubled the output of statistics. Initially, reports were generated for two companies that were the main sources for students (their employees) for our designation programs. This reporting program expanded from the top two companies to the top two dozen. These reports were customized for over one hundred companies on a quarterly basis. Now managed by our Marketing Research unit, the current production schedule is on an annual basis. These reports are used to provide companies with benchmark comparisons (within and between comparable companies) to encourage increased company support as their employees pursue our designations.

"Basic" Research: Attempts to Understand the Causes of Attrition

Taking and Failing the Exam. The first formal report on dropout was conducted in 1971. The focus in this study was on students who dropped out between registration for an examination and the exam itself. New candidates were more likely to drop out than were repeaters. Students who had previously passed examinations were more likely to continue and to be successful on future CLU examinations; those who had failed previous examinations were less likely to continue. One year of inactivity was proposed as a working definition of attrition, with the result that 45% of the students studied in 1973 were in attrition. Failing the first exam again was found to strongly relate to dropout.

Educational Background Related to Dropout. A number of studies looked at a readily available and powerful variable: the educational background of incoming students. We found that educational background interacted with exam experience in influencing attrition. If a person passed an exam, continuation in the program was unrelated to educational level; however, educational level was significant for those who failed, with those persons at the lowest educational level (high school diploma) most likely to drop out after failing an exam.

Attribution Theory. The studies on exam failure were followed by a survey that asked individuals to select one or more of nine reasons for discontinuing their CLU study program. Overall, the two responses indicated most frequently were "study interfered with my business" and "CLU studies interfered with my family duties." An analysis of persons who failed CLU exams indicated a strong attribution to exam failure for drop out. Moreover, persons at a lower education level were more likely to give exam failure as a reason for discontinuing their CLU study than were persons at a higher education level. Subsequent studies in 1974 and 1975 confirmed the powerful relationship of early exam failure and attrition. Research conducted in the late 1970s also looked at attribution theory as a basis for understanding dropout.

Test Anxiety Relationships. A number of studies from the mid to late 1970s focused on variables relating to the testing situation. "Test-wiseness" and "test anxiety" measures indicated moderate relationships with performance. Test anxiety in particular was found to relate to exam performance (and to attrition), with this relationship moderated by study method. High anxiety students were found to benefit more from a structured learning experience, such as that provided by a formal class, than from independent self-study.

Surveys of Dropouts. Declining enrollments, increasing attrition, and the resultant dire economic implications in the early 1980s gave renewed urgency to the problem of reducing attrition. In 1982 The American College conducted a new survey with three basic objectives: 1) to ascertain reasons for student drop out; 2) to determine students' current educational plans; and 3) to assess their satisfaction with various aspects of The American College. Surprisingly, seven out of

ten students who had been completely inactive for two full years still considered themselves to be merely "stopouts"; only 11% indicated no plans to continue formal study in the future.

"Found study too time-consuming" was the most frequently cited reason for stopping study; this factor was identified by almost twice as many dropouts (43%) as any other single reason. The thirty-five reasons provided were grouped according to personal circumstances (12), employment (5), academic (12), and financial (6) factors. Although "failure on exams" was chosen by only 20% of respondents, analysis of student comments indicated that exams are perceived as a problem by many students. Although respondents were generally satisfied with the College, some areas of their experience rated lower than others; the lowest rated aspects of their educational experience involved communication with the faculty, financial/cost issues, and, finally, "feedback on exam performance." Aspects ranked lowest were still rated in the "satisfied" range, however.

Suggestions from Dropouts. In 1983–1984 two studies were conducted among first year dropouts to explore perceptions of possible solutions or "fixes" to College-based problems. The first was a qualitative study involving focus-group recommendations from four different groups of dropouts. Results were documented in a formal report with suggestions, but a more quantitative formal survey to further corroborate the findings was also deemed desirable. This perceived need lead to the development of the Fundamental Improvements in College Services (FICS) Survey, which asked students to rate the extent to which an improvement in each problem area would be an inducement to return to their studies. Students identified four major problems: 1) cost of tuition; 2) availability of local intensive review sessions; 3) length of the CLU program; and 4) availability of local classes. Improvements in this area were viewed by students as inducements for returning to the College. The biggest inducements identified were the availability of local intensive-review sessions and the provision of local classes. Analyses suggested that exam failers have significantly different problems than do the exam passers, and that both groups need distinctly different treatments to improve their persistence. Failers were less satisfied with exam-related variables such as difficulty, fairness, and feedback. Also different were the ratings of study aid quality, student counseling, accessibility of College faculty/staff, and academic advising.

Recent Research. In an attempt to better understand attrition, a longitudinal process theory was developed and a research study initiated to examine the effectiveness of the model in predicting dropout. A comprehensive survey, entitled TACSIS (The American College Student Information Survey), was administered in 1987. Initial results supported the importance of newly identified variables such as distance education study skills and employer/immediate supervisor support and encouragement of professional education. Since 1988 attrition has been the focus of the Marketing Research Department. The ACCUTRACK System has been the dominant focus of this effort since that time.

"Applied" Research: Focus on Interventions and Their Outcomes

Exam Performance and the Limitation of a Fixed Standard. Because of the powerful negative effects on students of failing an exam, it was proposed in 1974 to increase the pass ratio for the first CLU course in order to encourage greater persistence. This highly controversial suggestion raised immediate objections against lowering standards but, as a result of this change in policy, the pass ratio for the two courses most new students take first has been raised to about 85%.

Testing Skills Programs. Two programs were developed in the mid-1970s to help students deal more effectively with testing situations. An experiment was conducted to analyze the effectiveness of a Test-Wiseness Book and an audiotaped Test Anxiety program. Results indicated that both programs had positive outcomes but, because of low statistical power in analysis, the impact of these efforts on attrition was suggestive rather than conclusive.

Examination Procedures. The introduction in 1982 of computerized testing for college exams has resulted in a number of potentially positive influences on attrition:

- **Flexible Scheduling and Immediate Feedback: Computerized Exams On Demand (EOD).** Although intuitively appealing, this procedure has not been subjected to a rigorous analysis of cost-benefits. Introduction of EOD has coincided with a drop in attrition rates, but the extent to which this change can be attributed to EOD is unclear.

- **Performance Feedback: Computerized Diagnosis of Exam Results by Course Assignment.** Previous research indicated the desirability of improved feedback. Surveys conducted after the implementation of improvements indicate increased student satisfaction. These improvements were a direct response to dropouts who suggested that such feedback would improve persistence.

- **Free Retake for Failed Exams.** In order to encourage failers to continue study and to try again, the College instituted and studied the effects of a policy of waiving the exam retake fee. The intuitive appeal of this policy continues and it has recently been fine tuned. In order to minimize procrastination leading to inactivity, a tighter time limit has been instituted to encourage earlier retakes.

Quality Contact: Implications for Marketing and Communications. A review of the research literature suggested that the quality of contact between the student and the academic institution is an important determinant of student persistence. Beginning in the mid-1980s The American College implemented a number of quality contact initiatives:

- A personalized President's welcoming letter to all new matriculants
- A "hot-line" for students with questions/problems (50,000 to 70,000 incoming calls received each year)

- Increase in the availability of Examinations on Demand from two courses in 1982 to all courses by 1990
- Provision to all students of individualized exam performance feedback and the opportunity to provide course feedback to faculty members
- Publication of "The American College Outlook," a student-oriented publication sent three times a year to all Huebner School of CLU-ChFC (Chartered Financial Consultant) students
- "Stubbed-toe" letters sent to first-time failers
- Availability of "on-line" student registration at the end of each EOD exam
- Letters confirming each transaction (e.g., course registrations) between students and the College
- Availability for purchase by students of computer-based diagnostic exams, and planning to make these "exam readiness" products increasingly available
- Commitment by eight companies to comprehensive student sponsorship programs
- Production of a video-based review of one course for use by Chapters, sponsoring companies, and students studying in small groups
- Implementation of personal telephone contact between Student Services counselors and 1) all new matriculants and 2) other students at a high risk of falling into attrition (e.g., first-time failers)

Many of these initiatives have been formally studied and the results of this research and evaluation effort have effectively informed practice.

Mentoring Programs: Huebner Personal Sponsorship Programs. Of particular interest is the potential for significant impact of this mentoring program. New students or students early in their studies have the opportunity to be formally sponsored by a graduate who agrees to a mentoring relationship with that student. This program has been in effect since the 1950s, and about ten percent of students are sponsored. A better understanding of the nature of the mentoring relationship was achieved through a qualitative study that identified the roles of the mentor from the point of view of each party involved. A survey research program formally studied various aspects of the program with the ultimate aim of making it more effective. Preliminary analyses comparing the activity of students having sponsors with those without sponsors indicated an advantage for sponsored students that increased in each of the three years the comparisons were made.

Future Research

Attrition has recently been identified as a key focus in our self study for accreditation. This renewed interest will undoubtedly lead to a revitalized program of research and intervention on this critical issue.

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A Synergistic Model for Statewide Telecommunications Success

Robert B. Leiter

Introduction

Distance learning has grown in recent years from a buzz word to a reality in every state in the United States. Some would maintain that distance learning is as old as civilization itself and an argument can certainly be made for that case. Rather than debating the philosophic beginnings of distance learning, let us set the parameters, beginning with the rise of distance learning in 1970 through the development of current technology. It was during the late 1960s and early 1970s that distance learning developed a new national momentum with the first television courses for credit. Since that time, specifically during the decade of the 1980s with the advent of what we might refer to as the technology revolution in education, distance education has become a driving force in education (Congress of the U.S. 1989; Chaloux 1985; Hezel Associates 1990). Distance learning has developed considerably from the Sunrise Semester, which seems quite primitive compared to today's ever-changing, totally interactive technology. My goal is to look at this distance learning phenomenon and to make useful observations on a pragmatic basis to determine how, through a synergistic approach, it can be used more effectively and efficiently in statewide systems.

In the next few pages, I will address the situation of statewide systems of distance learning by examining who is involved, what is involved, and how the total system can be made more effective. Traveling across the country over the past several years has revealed some interesting trends. Virtually every state has some type of distance learning effort underway. Some states, like Oklahoma and Nebraska, have been leaders since the beginning; others, such as Maine and Mississippi, are the "new kids on the block." Traveling, reading, and discussing distance learning has revealed several common threads in the successful programs and, conversely, commonalities in the unsuccessful ventures.

Components of Successful Programs

For the purposes of this paper the term distance learning system refers to local, state, regional, and national systems that facilitate the delivery of instructional programming. There are many elements that go into developing a successful distance learning system. Four key components are planning, commitment, coordination, and funding.

Planning. Planning is a key element in developing a successful distance learning system, just as it is in other successful ventures. Planning should be done at both the campus and the state levels. Each campus involved in distance learning should develop its own campuswide task force. A member of each campus task force should then be appointed to the state task force, which includes other appropriate state officials. These early groups will have a difficult task: they will have to wrestle with problems of turf, control, funding, equipment, and many other issues. These issues should be addressed early in the process before decisions are made that may later have to be reversed.

Possibly the best reason for planning is to determine needs. Too many institutions have made decisions to implement distance education by purchasing and installing equipment, and then attempting to determine how best to use it. This situation is not dissimilar to what happened with computers in many schools a decade ago. A plan will help identify needs, goals and objectives, and the target audience, thus providing an important step toward a successful statewide system.

Commitment. A second essential factor is commitment. Successful programs have innovative individuals spearheading the development of distance learning. However, there also must be a commitment from the top levels of management: the president of a lead institution, a governing board of higher education, a state legislature, or even a strong state governor. Commitment at these levels will ensure more widespread support for the program. Ideally, this commitment should be from all of the above, but, in reality, it may be from only one or from any combination. A program without this commitment will probably fail.

Coordination. Coordination is a continuation of planning. During this process, additional elements are added. It must be determined what programs will be delivered, by whom, by what means, and at what time. To ensure successful delivery to legitimate audiences, groups should include all the stakeholders. Delivery, marketing responsibility, and specific programming issues will be worked out during the coordination process.

Funding. To say that funding decisions are absolutely essential is to understate their importance. Because of the major investments in capital, equipment, studios, and classroom facilities, the venture must be thought of in long-range terms. Partnerships with business and industry have grown in popularity and importance. Funding has come from state and federal agencies as well as from private foundations such as the Annenberg New Pathways Program. These arrangements assist in getting programs started. A more pressing concern is what happens when the grant runs out or the business partnership no longer provides free access for transmission. This consideration highlights the importance of long-range planning and commitment. Most states that have been successful have received such a commitment from the state government as an investment in education. This investment in education can be further viewed as an investment in economic development and the state's future.

A Synergistic Model

One way to make a statewide system in distance learning work effectively is to develop a synergistic model. The following model (see Figure 1) presents a scenario that can be modified to fit many situations.

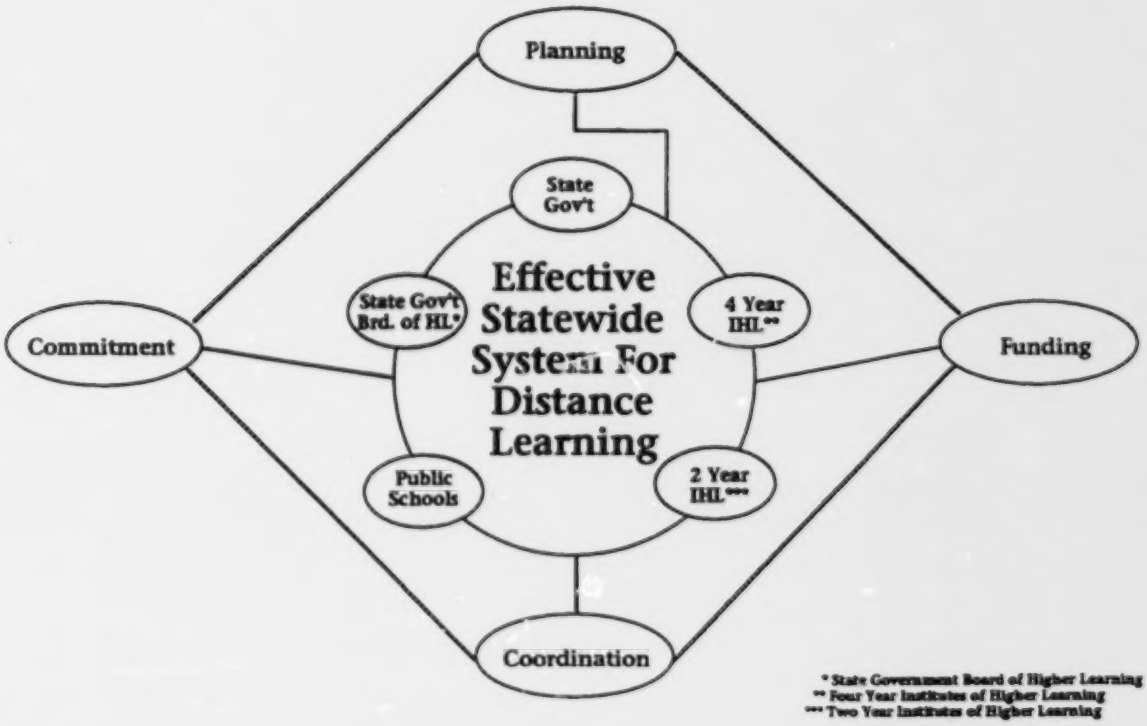

Figure 1. Synergistic Model for Statewide Telecommunications

In the outer diamond are the four elements that must go into developing and sustaining a viable effort in distance learning: planning, coordination, commitment, and funding. These elements feed into the inner circle. The inner circle consists of the stakeholders, which in this model are state government, state governing boards of higher education, public schools, two-year institutions, and four-year institutions. These bodies working cooperatively can lead to a successful and effective statewide system for distance learning.

Summary

Distance learning is in its infancy as a significant force in education. Rapid changes in technology coupled with increasing diversity in clientele necessitate better and more efficient education. Employing the principles of planning, commitment, coordination, and funding will assist in achieving educational goals in times of limited resources. Implementing a synergistic model for statewide telecommunications will help ensure the successful delivery of educational programming to a wide range of audiences.

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Theory of Distance Education

Michael G. Moore

In this working paper prepared for the Second Symposium on Research in Distance Education, I will provide a set of quotations from my 1972/73 Two-Dimensional Theory. This is done for the following reasons:

1. I question the value of research that claims to be about distance education but is not grounded in distance education theory, and I would like help in identifying *specific research questions* derived from and, in turn, contributing to this theory.
2. I want to encourage thinking about the effects on educational dialogue, structure, and autonomy of those media—specifically computer conferencing, audio conferencing, and video conferencing—that have become common since the theory was written.
3. I want to share some of the history of this theory, but I also want colleagues to participate in its continued evolution, and to have them share new thinking.

The History

Between 1970 and 1972 I carried out research at the University of Wisconsin from which emerged certain concepts that were proposed as the distinguishing elements of a field of study named "Distance Education." An article published in 1972, another in 1973, and a doctoral dissertation in 1976 were among the first attempts in English to define distance education and its constituent elements. These elements were learner independence, which I called learner autonomy; interaction between learner and instructor, which I called dialogue; and certain characteristics of course design that I called structure (Moore 1972, 1973, 1976).

This conceptualization might today be described as a grounded theory, since it was developed after a two-year inductive analysis of descriptions of two thousand instructional programs. Even to this day it remains one of few distance education theories with an empirical base. My original intention was to map out the changing field of correspondence instruction, or independent study as it was frequently called. I proposed to relate independent study to general educational theory, since the educational theory of the time was seriously at fault in its neglect of forms of education that did not occur in the face-to-face classroom setting. In the course of planning the study I discovered that, during the late 1960s and early 1970s, there was more than I had expected going on outside the classroom. More than correspondence study alone, there was also a movement towards a fundamental change in views about the relationship of learners to teachers. The question that guided the research was then reworded as follows: "Does an analysis of selected literature of the various

methods used to instruct independent learners reveal a pattern of educational elements that can be used to differentiate the field and define it?" (Moore 1971).

After struggling to invent a new term that would encompass both traditional and emerging methods of instructing learners in non-classroom situations, I settled on an Anglicization of the concepts "Fernstudium" and "Fernunterricht" that I first heard used on a visit to the University of Wisconsin by the Swedish scholar Börje Holmberg in 1970. I added the idea of learner autonomy, which was emerging as a basic idea in the study of adult education, and which is derived from the influence of the humanistic psychologists. This concept, which I called the "second dimension of independent learning," also owed much to Wisconsin professors Charles Wedemeyer (1971) and Robert Boyd. Boyd also suggested the change from a focus on "individualization" to a focus on "structure" and encouraged the development of a model in three-dimensions. The thinking about adult development that is found in the original papers, of which there is but little in this paper, was stimulated by Howard McCluskey.

Over the past twenty years, many distance education theorists have discussed this theory and the inter-relationship of dialogue, structure, and autonomy. The theory was chosen by the Australian writer Keegan (1980) as one of the world's six most significant distance education theories. Another prominent international writer, Holmberg, has cited the theory in many articles, papers, and books (Holmberg 1986). In introducing his book, Britain's Greville Rumble said the theory contained "the most fruitful use of the term 'distance'" (Rumble 1986, 7). Of special interest in recent years has been the effect of the new interactive telecommunications media. In 1991 two important books appeared. Verduin and Clark's *Distance Education: The Foundations of Effective Practice* features the distance dimension of the original theory, while Candy's *Self-Direction for Lifelong Learning* focuses on the dimension of learner autonomy. Further mention is made of these books below.

Most of what follows in this paper are original statements intended to show some of the evolution of the theory. The title of the publication from which they are taken precedes the extracts, which are followed by a few comments on recent publications that discuss the theory. (Please note that if I were writing this today I would avoid the gender specific terminology that was normal twenty years ago, as well as the use of the academic "we.")

Convergence (1972)

"We started by postulating that the universe of instruction consisted of two families of teaching behaviors which we referred to as 'contiguous' and 'distance teaching'" (p. 76).

"We defined distance teaching as 'the family of instructional methods in which the teaching behaviors are executed apart from the learning behaviors including those that in contiguous teaching

would be performed in the learner's presence, so that communication between the teacher and the learner must be facilitated by print, electronic, mechanical, or other devices'....[W]e collected more than two thousand items of literature pertaining to distance teaching" (p. 76).

"Next we dichotomized the literature into two sets which we called 'individualized methods and programs' and 'non-individualized methods and programs'" (p. 78). The former consisted of programs "which led to learners controlling the rate of their progress; the latter consisted of methods and programs which provided learning experiences at a pace that was beyond the learners' control" (p. 78).

"A second dichotomy organized programs and methods into 'dialogic' and 'non-dialogic'; in the former category we placed programs that provide a means of interaction between the learner and his teacher, while in the latter were programs which permit interaction between learner and the content prepared by the teacher (as in a programmed text) but provide no communication with the teacher himself" (p. 78).

"[I]ndividualization and dialogue should be regarded as ordered qualitative variables. Instead of dichotomizing programs into 'individualized' or 'non-individualized,' 'dialogic' or 'non- dialogic,' we would be advised to order them into 'highly individualized' and 'low individualization,' 'highly dialogic' and 'low dialogue,' and thus we should obtain a measure of whether a program is more distant or less distant than another. In this way an on-campus independent study program can be considered a 'low distance' program since it certainly provides 'apartness' between a learner and teacher when they engage in the instructional process, but the degree of individualization of his program is high, and so is the opportunity for dialogue. Where these characteristics are high, we would say distance is low" (p. 79).

"The elements of distance we have been working with are important, but they are elements of only one dimension of independent learning and teaching, which we now think has two dimensions, the second being 'learner autonomy'....We believe now that we will eventually be able to classify programs of noncontiguous teaching according to the extent to which learners control and influence the learning; that a relationship between this 'autonomy' and individualization and dialogue will be found; and that these are the key characteristics on which a full theory of independent learning and teaching will be built" (p. 80).

"In our efforts to explore the various aspects of learner autonomy in distance teaching and learning programs, we have tried to prepare a system that makes it possible to order programs according to the kind and extent of autonomy the learner is expected—or permitted—to exercise. We are placing programs in appropriate positions on a continuum, with those permitting the exercise of most autonomy at one extreme and those permitting the least at the other. For every program, we seek to identify the relationship between learners and teachers, and where control of each instructional process lies, by asking:

Is learning self-initiated and self-motivated?

Who identifies goals and objectives, and selects problems for study?

Who determines the pace, the sequence, and the methods of information gathering?

What provision is there for the development of learners' ideas and for creative solutions to problems?

Is emphasis on gathering information external to the learner?

How flexible is each instructional process to the requirements of the learner?

How is the usefulness and quality of learning judged?

By this subjective, inductive method we can put together a typology of distance teaching programs, classified by the dimension of learner autonomy:" (pp. 81–82) (See Figure 1).

"We are preparing a number of hypotheses that may be tested through the typology, including the important hypothesis that there is a positive relationship between distance as measured by individualization and dialogue, and autonomy" (p. 83).

Note: "If the instructor has an understanding of the autonomy concept he withdraws his support gradually, encouraging the learner to assume increasing control of his affairs. If the withdrawal is not made skillfully and deliberately, however, the consequence is an adult whose learning autonomy is stunted and who continues to seek the control and direction of others" (p. 84).

		Objective Setting	Implementation	Evaluation
A = Learner	1	A	A	A
Determined	2	A	A	N
("Autonomous")	3	A	N	A
	4	A	N	N
	5	N	A	A
N = Teacher	6	N	N	A
Determined	7	N	A	N
("Non-autonomous")	8	N	N	N

Figure 1. Types of Independent Study Programs by Variable Learner Autonomy

***Journal of Higher Education* (1973)**

"In a distant learning and teaching situation the teacher performs the tasks of teaching in some ways similar to and in others different from teaching in a contiguous situation. Similarly the learner performs the tasks of learning by a variety of techniques, the distance between the two is bridged and the more effective the bridging the less the distance....We decided that a learner's 'distance' from his teacher is not measured in miles or minutes. It is defined as a function of individualization and

dialogue....As measured by dialogue and individualization, methods of distance teaching in general and programs in particular can be classified from most distant to least distant" (p. 664). A classification of methods is shown in Figure 2.

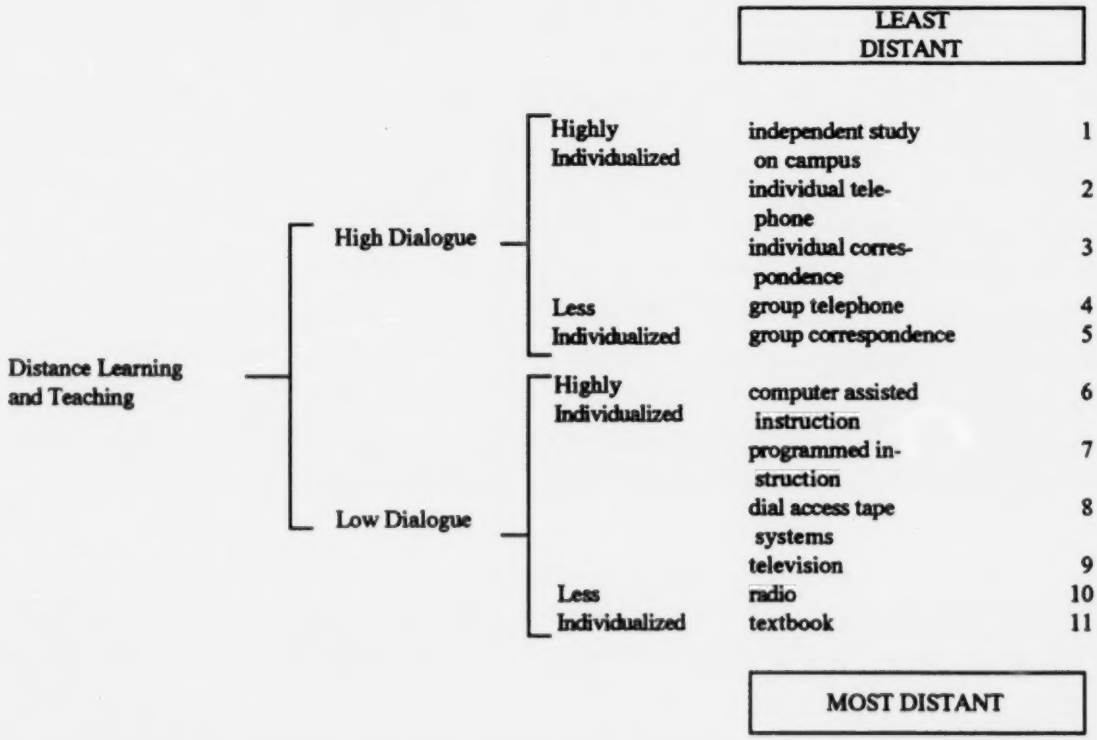

Figure 2. Distant Learning and Teaching Methods Classified by the Dimension of Distance (from Moore 1976; most of this was reproduced in Sewart, Keegan, and Holmberg 1983)

Investigation of the Interaction between the Cognitive Style of Field Independence and Attitudes to Independent Study among Adult Learners (1976)

"Telemathic teaching will be defined as all those teaching methods in which because of the physical separateness of learners and teachers, the interactive as well as the preactive phase of teaching is conducted through print, mechanical, or electronic devices" (p. 25). "Communication, the sending and receiving of messages, is an essential element of every educational program....Dialogue is two way communication. Telemathic teaching requires the use of electronic, print, or mechanical methods of communicating, and these methods differ in the extent to which they permit two way communication, or dialogue between learners and teachers. In programs in which a high degree of

dialogue is possible it can be said that distance is less than programs in which little dialogue is possible. For example in a telemathic teaching program using the Educational Telephone Network, since dialogue is easy the learner is less distant from his teacher than one in which the FM/AM radio is the communication method, when dialogue is impossible" (p. 30).

"Structure is the extent to which the objectives, implementation procedures and evaluation procedures of a teaching program are prepared or can be adapted to meet specific objectives, implementation plans and evaluation methods of individual students. While dialogue is a measure of the degree to which the communications medium in a telemathic program permits learner teacher interactions, structure is a measure of the extent to which, whether there is dialogue or not, the program will permit transactions between learner and teacher. It is a measure of the extent of the responsiveness of a teaching program to the learners' individual needs. To the extent that a program 'consists of preproduced parts at least in the form of particularized plans listing item by item the knowledge and skills to be covered by the program' (Holmberg) the program may not be responsive to learners idiosyncrasies, and structure is said to be high" (p. 30).

"In a highly structured program such as in a linear or non branching programmed text, no variation of the program is possible, while a correspondence program is likely to be somewhat less structured, but perhaps more than a computer assisted instructional program in which the medium can respond to thousands of different stimuli from many learners. Among programs using a particular medium the degree of structure will vary" (p. 31). "Using the variables of dialogue and structure, telemathic teaching programs can be classified according to distance between learner and teacher" (p. 31).

"In [Figure 3]..., where +D represents dialogue, +S structure, -D no dialogue, and -S no structure, the most distant programs are those of the -D-S type, and the least distant are the +D-S

	Type	Program Types	Examples
Most Distance	-D-S	1. Programs with no dialogue and no structure	Independent reading-study programs of the "self-directed" kind
	-D+S	2. Programs with no dialogue but with structure	Programs in which the communication method is radio or television
	+D+S	3. Programs with dialogue and structured	Typically programs using the correspond-ence method
Least Distance	+D-S	4. Programs with dialogue and no structure	e.g., a Rogerian type of tutorial model

Figure 3. Types of Telemathic Teaching Programs

type. These are theoretical poles, and all programs fall between them. The variables by which we are defining distance are qualitative, and programs must be regarded as 'more' or 'less' distant. Therefore, a correspondence program is likely to be less distant than a programmed text, since it is likely to be less structured, and certainly more dialogic. However, among correspondence programs great variability in distance will be found, some especially being more dialogic than others, and some correspondence programs can be no more dialogic or unstructured than programmed instruction. Thus, it is not intended to classify communications methods in this model, but only the uses to which methods are applied in educational programs.

In a program where distance between teacher and learner is low, because dialogue is easy and there is a minimum of structure, both teachers and learners can respond easily to the stimuli of others. In such a program the teaching behaviors Smith calls 'admonitary acts' as well as 'directive action' and 'logical operations' are possible. However, when dialogue is difficult, or impossible, and when structure is high, 'admonitary acts' become difficult or impossible. In a programmed text, such as Mager's a minimum of dialogue between teacher and learner is obtained by use of the branching technique. The admonitary acts, such as 'ooops! You didn't follow instructions,'...are weak by contrast to the power such statements would carry in a highly dialogic interaction. In telemathic teaching 'directive action' is more easily communicated, than admonition, but the teacher must assume that a large part of direction, as well as admonition, will be self administered by the learner. The less distance, the more direction will be feasible. Even the most distant teachers are able to communicate 'logical operations.' Whether a particular learner will benefit from a program low in distance, or from a highly telemathic program is determined by the extent to which he benefits or is impaired by direction and admonition. This is determined by his competence as an autonomous, or 'self directed' learner" (pp. 31–33).

"However, since distance and learner autonomy are both qualitative variables, so is the term independent study descriptive of elements in all educational programs rather than descriptive of an exclusive class of programs or methods. [Figure 4 provides]...a typology of all educational programs showing the range from most independent study to least independent study.

In [Figure 4]...D represents Dialogue and S represents Structure. Programs range from 1-D-S, which is a program of high learner autonomy, and very high distance, to 8+D-S, a program where autonomy and distance is very low, so the learner is largely controlled by the teacher. The former program is a high independent study program, the latter is low. Using this typology, we should be able to describe any educational program in terms of its Learner Autonomy, its Telemathy, and its Independent Study" (pp. 52–53).

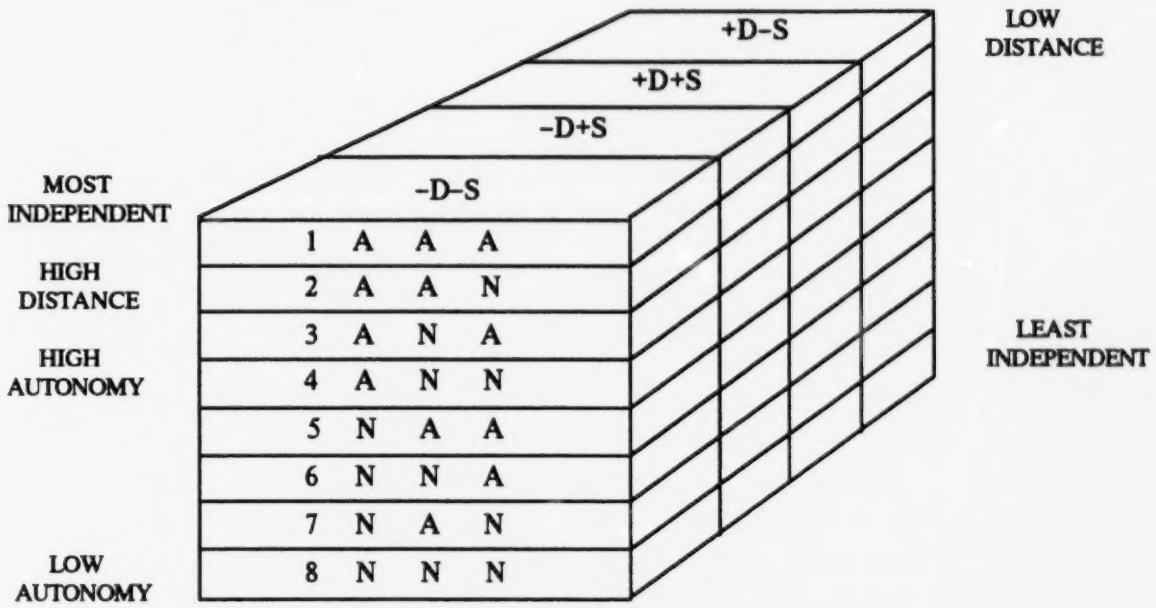

Figure 4. Suggested Typology of Educational Programs

The individual adult learner (In *Adult Learning and Education*, ed. M. Tight, 1983)

"Dialogue describes the extent to which, in any educational programme, learner and educator are able to respond to each other. This is determined by the content of subject-matter which is studied, by the educational philosophy of the educator, by the personalities of educator and learner, and by environmental factors, the most important of which is the medium of communication. For example, an educational programme in which communication between educator and the independent learner is by radio or television permits no dialogue. A programme by correspondence is more dialogic, yet not to the same extent as one in which correspondence—or radio or television—is supplemented by telephone communication.

Structure is a measure of an education programme's responsiveness to learners' individual needs. It expresses the extent to which educational objectives, teaching strategies, and evaluation methods are prepared for, or can be adapted to, the objectives, strategies, and evaluation methods of the learner. In a highly structured educational programme, the objectives and the methods to be used are determined for the learner, and are inflexible. In a linear, non-branching programmed text, for example, there is less opportunity for variation, according to the needs of a particular individual, than there is in those correspondence courses which permit a wide range of alternative responses by the

tutor to individual students' questions and assignment submissions. In a programme in which there is little structure, and dialogue is easy, interaction between teacher and learner permits very personal and individual learning and teaching" (pp. 157-58).

Learning How to Learn (Smith 1982)

The second dimension has been described by Smith as follows: "This was derived from the fact that in the most simple terms an undertaking like a learning project, a course, or even a single class session has three major activities to be carried out: preparation, execution, and evaluation. It is planned, conducted, and evaluated. Programs can be plotted on a grid that places those permitting the learner to exercise a great deal of autonomy over all three functions at one extreme (Type 1) and those permitting very little learner autonomy in any of the three (Type 8) at the other extreme....In addition to providing a way to classify programs according to the nature and degree of self-direction they entail, the typology suggests a way to look at individual preferences for control of the respective phases in an educational endeavor. One might prefer (and therefore seek or be directed toward) programs that emphasize the degree of autonomy found in any of the respective combinations" (p. 67) (see Figure 4).

Open Learning (1990)

"I think there is distance in all educational relationships, with distance measured by the extent of dialogue between learner and instructor and structure of the teaching program. The autonomy of the learner is taken into account in varying degrees in all educational programmes.

What we normally refer to as distance education, where the geographic separation between learner and instructor is such that electronic or print communications media have to be employed to transmit the dialogue, are those programs that are characterised by greater distance. What we are normally referring to as distance education is a subset of all educational programmes, the subset characterized by geographic separation of teacher and learner, by greater structure, lower dialogue and thus greater transactional distance. So to return to the dichotomy Keegan presents...I do not agree with his statement that distance education is simply a teaching mode, because it includes learning too, and is more rightly seen as a family of transactions between teachers and learners. It is a distinct educational mode in the sense that the more distant forms of teaching-learning can be recognized as having some very different characteristics from the less distant, or to be more exact the characteristics they share are of heightened significance in the more distant programs. In the continuum of educational programmes there is a "grey area" where the distinction between what

would be called a distance education program and what is not, becomes blurred. But it doesn't matter greatly. It's as if geographers dispute the actual source of a river, which is highly esoteric to the majority of the population who live by its waters, and even to most researchers who study its many other features. The point of definition and theory was never more than to provide the beginning, and the basis for the establishment of research and the improvement of practice, and the blur at the point of overlap between conventional education that has elements of distance and those educational programs that can be described as characteristically distant is of no great significance except to theorists.

Whether distance education is a "good thing" depends on the needs of learners, their ability to benefit more from a distance education programme than an alternative. For many people, for many subject areas, distance education is a good thing. For some it is not. All educators need to keep an open mind, and approach the possibility of using distance education with the needs of their learners uppermost in their minds. With this approach it is likely that distance education will indeed contribute to the improvement of conventional education, as conventional education has, and continues to offer much to distance education.

As stated above, learner autonomy, like transactional distance is a qualitative, or continuous variable. In the early theorizing I called it the extent to which in a program the learner determines objectives, implementation procedures, and resources and evaluation. Note that by "extent" I mean that in some programs learners may have little part in the decision making, and there is no judgement that this is a good or bad thing. The opposite of learners exercising autonomy, as I pointed out in the 1973 paper, is teacher control. When we classify programs by the variable of learner autonomy, we are at the same time classifying them by the extent of teacher control" (p. 12-13).

Distance Education: The Foundations of Effective Practice (Verduin, and Clark 1991)

In Verduin and Clark's (1991) *Distance Education: The Foundations of Effective Practice,* a chapter on program foundations begins with a synopsis of my 1973 work and proceeds, as they claim, to "develop a more representative model" that they offer as "an evolution, not a rejection, of the concepts" I advanced. This is how these authors summarize my theory, which they introduce as "widely considered to be one of the better-developed paradigms related to the field of distance education" (p. 121).

"He began his research with the belief that instruction could be divided into two fields of study: face-to-face, or contiguous study, and separate or non-contiguous study" (p. 121). This is true, since the theory of the time dogmatically asserted or assumed that all instruction was in face-to-face settings. However, eventually I concluded that distance, as I defined it, was existent in every

teaching-learning transaction to a lesser or greater degree, so that educational programs ought not be dichotomized, but regarded as existing on a continuum of distance, with what we normally refer to as distance education being those programs characterized by significant degrees of transactional distance.

Verduin and Clark continue: "The distinguishing characteristic of both independent study and distance education is the separation of teacher and learner that makes the use of media a necessity. Programs designed to encourage independent or self-directed learning, such as do-it-yourself books by experts in a field, result in learning that might be called distance learning. Distance education on the other hand, requires formal evaluation and two way communication with an educational agency as well as independent study..." (p. 121). I did not say, or certainly did not mean, what is imputed here. I regarded, and still do, the business of education as the deliberate planned facilitation of learning, and reject the use of the term distance learning when it includes the work of the teacher or teaching institution. Distance learning is only the corollary of distance teaching; the two make the transaction that is distance education. The so called self-directed learner who uses a teach-yourself book is using a highly structured, low dialogue piece of teaching, and is a participant in a highly distant education process. One of the most critical features of distance education is that while there are two actors—teacher and learner—their two sets of activities occur at different places and often at different times. Such is the situation with teach-yourself materials. Evaluation does not have to be formal, communication does not *have* to be two way, and certainly does not have to be with an educational agency. All of these characteristics will *normally* be the case in institutionalized distance education, but are not required characteristics of transactional distance. What there must be is deliberate, planned learning, program planning, implementation, and evaluation; dialogue and structure; and a teacher and learner.

The authors further argue: "Because he considers the concept of distance or separation to be crucial, Moore categorizes independent study and distance programs in terms of transactional distance, which is basically an expression of the sense of distance felt by the learner in the educational transaction in question. He defines transactional distance in terms of two factors, dialogue and structure" (p. 122).

Transactional distance is not simply what the learner feels. It is a characteristic of the transaction between the instructor and learner and is a characteristic of each teaching/learning program. It is determined by the extent of structure and dialogue which makes for more or less individualized, more or less personal, instruction. It is true that the learner has an emotional as well as cognitive reaction to the transactional distance, but the emotion is caused by the distance, and is not itself the distance. The distance is, to repeat, a characteristic of a program. Thus students will respond differently to a program of given distance, and how they respond depends largely on their sense of self-direction, or learner autonomy. According to Verduin and Clark, "Dialogue refers to two-way

communication between teacher and learner. Transactional distance is greater when there is little dialogue and smaller when there is more dialogue. By structure Moore means the degree to which objectives, study methods, and evaluation may be adapted to the needs of individual learners. More structure increases transactional distance while less structure decreases it....Because teachers and learners are separate during instruction, says Moore, learners must be emotionally independent, self-motivated, and capable of coping with learning problems on their own—in a word, autonomous. This assumption is borne out by studies of field independence and dependence in distance learners. Moore therefore sees autonomy as another important dimension of distance education. He classifies programs in terms of the autonomy learners can exercise in the setting of objectives, choosing of study methods, and making decisions concerning evaluation" (p. 122).

Verduin and Clark quote my 1973 definition of independent study: "any program in which teaching and learning take place while teacher and learner are separate and in which the learners' influence in determining objectives, study methods and decisions about evaluation is at least equal to the teacher's influence" (p. 123). They conclude that my definition of independent study can only be used to describe a minority of distance education programs, and suggest I was not intending the definition to cover all types of distance education. This is correct, of course. The definitions of distance education are found elsewhere in the theory; the definition of independent study is derived from the concepts of distance education and learner autonomy. The definitions of distance education are all-encompassing. It is the variables of dialogue and structure that define them, and while these variables defined transactional distance, it was what I referred to as the Second Dimension, that is, Learner Autonomy, that provided the link between distance education and adult education. The concept of learner autonomy was discovered in the study of the literature and programs of adult education, and from there the question of autonomy was found to be relevant to all programs. Verduin and Clark have not appreciated this, and as a result have set themselves the task "to develop a more representative model, building especially on Moore's theory" (p. 123). The model they have produced has the following features: separation of teacher and learner; evaluation and two-way communication; any use of media for self-study.

They state that "distance education is a subset of distance learning that includes evaluation by distance educators and two way communication with them and that usually includes the structuring of media content and use by the educator" (p. 124). They state that "Moore's concept of dialogue or two way communication is sound, but it should include the idea of support since the basic reason for dialogue is to provide support of one kind or another to the distance learner. Field independent students may only be concerned with the dialogue to the extent that they can get answers to questions about content, but field dependent students are more likely to use dialogue to receive emotional support " (pp. 124-25). Concerning structure they state: "Our view of structure differs considerably from that of Moore. Moore defines structure in terms of the responsiveness of the program to the

objectives, study method and evaluation of individual learners. The work of Beder (1985), which defined structure as a function of the formality of the subject matter was used in our model....Certain fields contain more knowledge of a hierarchical or structured nature than others....The difference in a high structure field and a low structure field such as education lies in the degree of formality or informality of the overall structure" (pp. 125-26). In the third dimension of their model, termed general competence/self-directedness, Verduin and Clark note that "Moore's view of autonomy (1973) is combined with the self-directivity proposed by Pratt (1988)....We do not assume that self-directedness is inherently good or bad" (p. 127).

Self-Direction for Lifelong Learning (Candy, 1991)

The learner autonomy dimension is selected by Candy (1991) for study in his *Self-Direction for Lifelong Learning*. He reproduces the Typology together with the questions I suggested to locate a program. He criticizes the view that it should be possible to classify any program as autonomous or non autonomous on each of the three heads—establishment events, executive events, and evaluative events—asking, "Is it realistic to treat the three domains as independent of one another?" (p. 210), and he gives the opinion that "the exercise of autonomy cannot be realistically limited to any one part of the learning process: for example in course content but not assessment or in choosing one's own pace but not one's objectives" (p. 210). He also questions "how realistic it is to judge whether or not a program is autonomous based on externally visible criteria....[I]t would be possible for different learners to have varying perceptions as to how much independence they enjoyed in each of the three domains..." (p. 211). In his opinion, "the major determinant of learner control is the learner's subjective understandings and feelings of potency, not the objective, especially teacher centered, aspects of the situation" (p. 211).

Obviously a debate about the variables of transactional distance is to be welcomed. There are numerous discussions not mentioned here. The good news with which I conclude is that a rich field of research is now clearly in view. The theory has to develop further, but by generating the debate and the research, it has done its work.

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